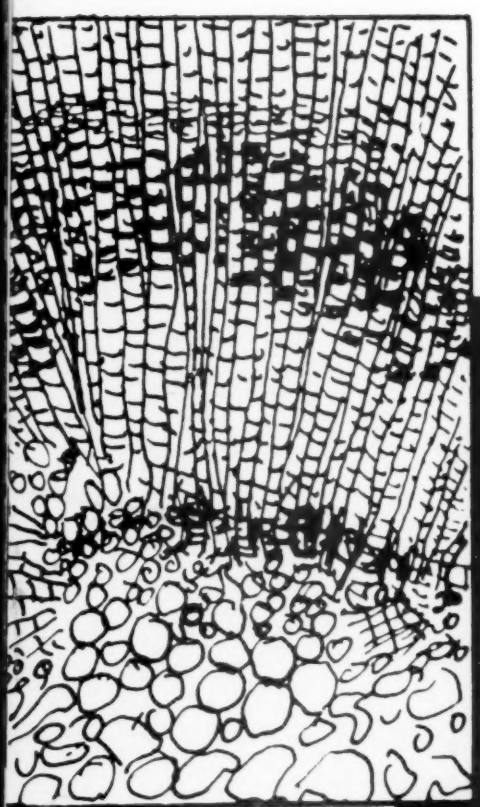
September 4, 1961

PULP & PAPER



Lignin: Fresh approaches taken to unlock its valuable secrets . . . 5

Family management spells success at Whippany 47

Menasha mill gets water from unusual source 50

'Wastes' yield array of useful products 55

Tree-length logging— its merits debated 67

The Cheetah, world's fastest animal, speeds of 70 m.p.h.

Speed with functional perfection

After several years of design and trials, we now offer this high speed Rotabelt Suction Unit. Since its introduction it has completely proved beyond doubt that it is one of the most outstanding and efficient pieces of machinery ever offered to the Paper trade. Units are now increasing paper mill efficiency throughout the world.

HIGH SPEED

ROTABELT

REGD. TRADE MARK

suction unit

RECENT INSTALLATIONS HAVE ACHIEVED

Increase in wire life as great as 300% by the total elimination of friction between the wire and the flat suction boxes previously used.

Reduction in couch power up to 30%.

Considerable increase in production with less maintenance, due to fewer wire changes.

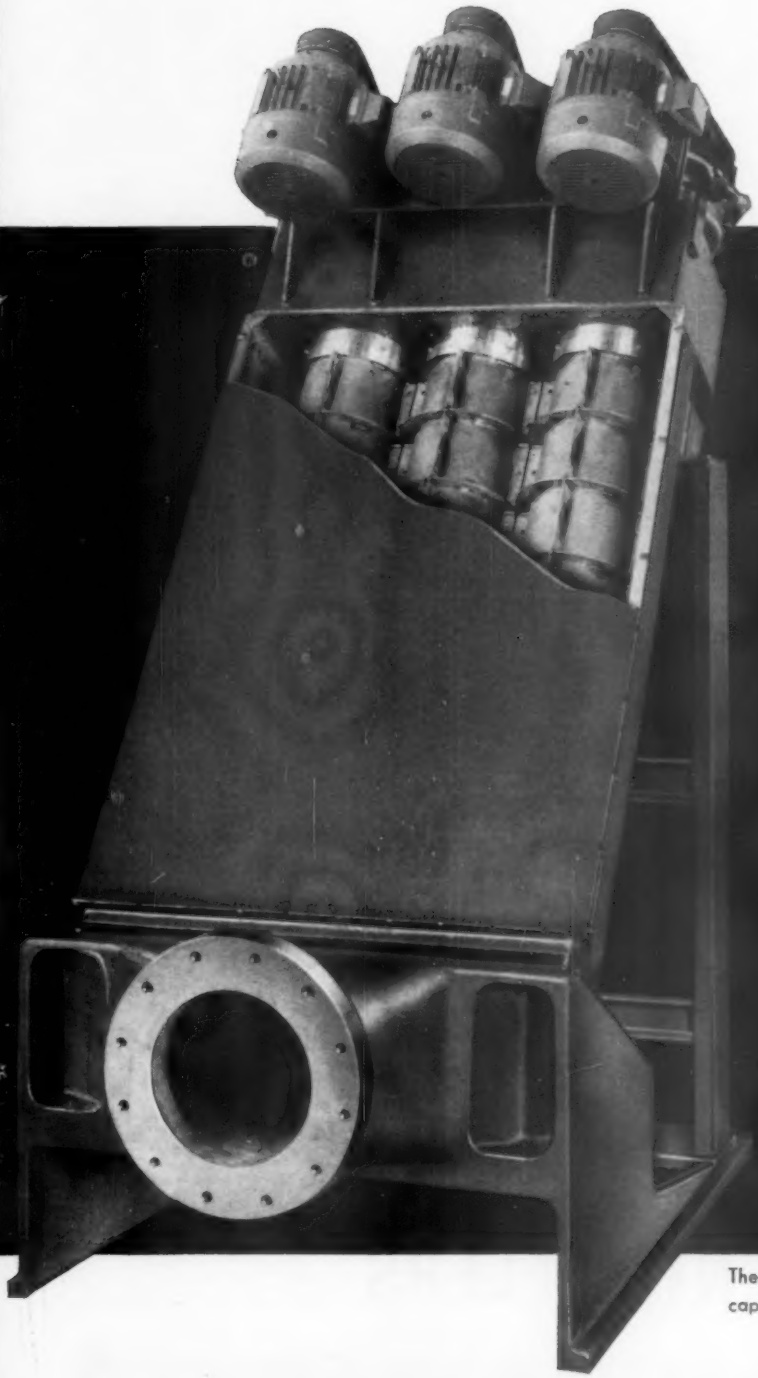
Send for leaflet to-day

W. P. EVANS & SON LTD.

NASHUA NEW HAMPSHIRE TEL. TUXEDO 2-9081

Concentration up to 16-18%!

Heat Recovery
Chemical Recovery
Storage Stock Thickener
Bleach Stock Thickener
Asphalt Dispersion Pre-thickener
Other Thickening Operations



Rice Barton's Water Extractor dewaters pulp and paper stocks from 3% to these surprisingly high solid values. Over 50 recent installations throughout the world are actually attaining these final consistencies at capacities for economical operation.

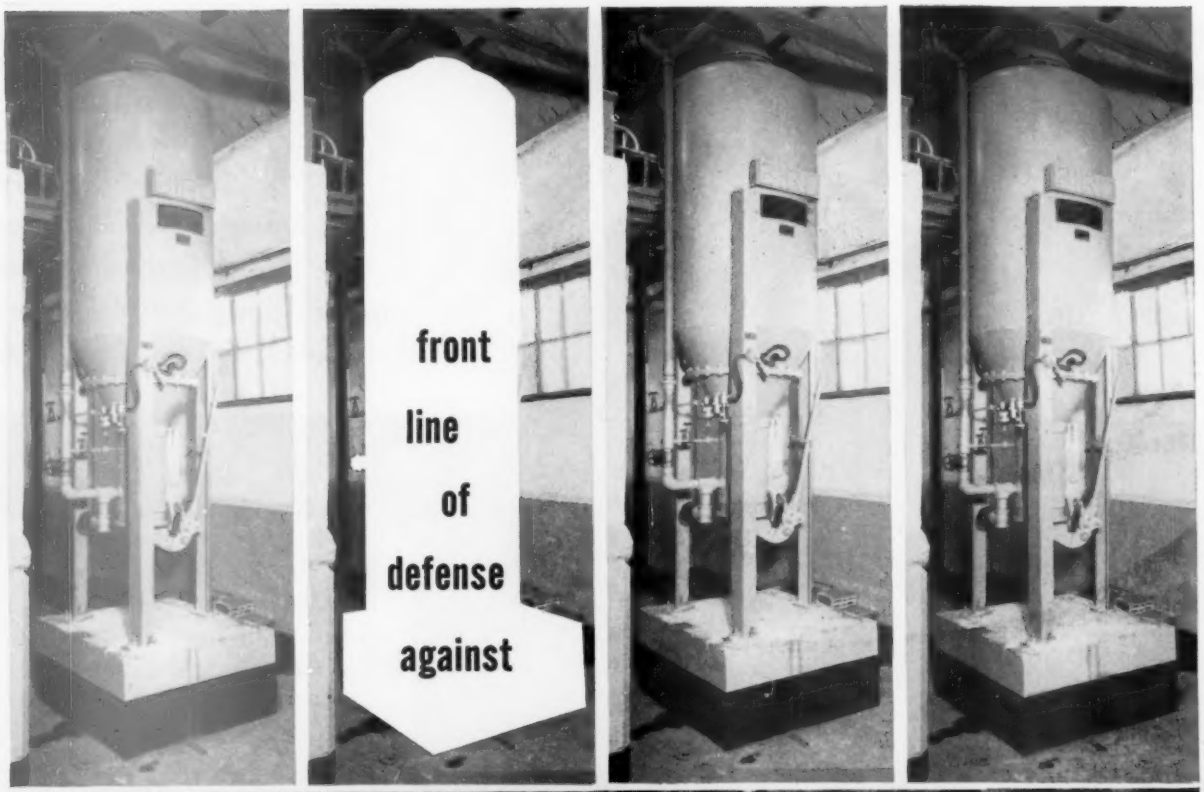
Write for specific performance data for your dewatering application.

- Simple operation—capacity and consistency easily controlled
- Low original investment and inexpensive to operate
- Small floor space—height 8′ 4″, width 4′ 3″, depth 4′ 6½″
- Output approximately 3 tons per hour

The Water Extractor is manufactured in other sizes for capacities required

RICE BARTON Corporation, Worcester, Mass.

Fourdriniers • Press Sections • Dryer Sections • Calenders and Supercalenders • Reels • Winders • Head Boxes • Size Presses • Breaker Stacks
Differential Draw Control and Cone Pulley Drives • Pulping Equipment • High Velocity Air Dryers • Trailing Blade Coaters • Fibre-Flash Drying Systems



The BIRD CENTRIFFLER stands guard against heavy and oversize contaminates in the stock as it comes from the pulper.

Caught and removed for good and all is the junky, hunky metal and dirt that can raise hob with expensive equipment or get broken up into fine, gritty particles that hurt quality and cause wear and tear on wires, rolls and felts.

BIRD CENTRIFFLERS

BIRD
MACHINE COMPANY

SOUTH WALPOLE, MASS.
REGIONAL OFFICES: EVANSTON, ILLINOIS
PORTLAND 4, OREGON • ATLANTA 9, GEORGIA
Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

September 4, 1961 PUBLISHED EVERY OTHER WEEK VOLUME 35, NUMBER 18

PULP & PAPER

PULSE OF THE INDUSTRY

NEWS DIGEST 5

RESEARCH & TECHNOLOGY

Scientists are cracking lignin's riddles. New approaches are yielding results, they report at international symposium 5

BUSINESS

Price hike aids box makers; but it's doubtful boost will strengthen position of other grades 9

PRODUCTION

Pulp production in first half ran a touch ahead of last year—but paper output flagged 13

TRANSPORTATION

CZ will use all-purpose cargo ships 13

NEW PRODUCTS

Development of three new products points up the renewed vigor in research activities 13

INDUSTRY GROWTH

St. Regis blade coater set for operation 15
Option on Grande Prairie timber dropped 15
Standard Paper installs new Fourdrinier 17
Hammermill, Rayonier organize joint firm 17
West Virginia forms paraffin-carton division 17
Brief items of growth news across the industry 21

PULPWOOD MANAGEMENT

Sen. Allott's amendments would free vast acreage ... 21

PEOPLE

CZ elevates two in Oregon division 27
Champion's Ohio division promotes three 27
Kuhlman joins East Texas P&P 27

COVER PICTURE: Cross-section of cell structure of wood shows lignin in black and cellulose in white.

FEATURES

A FAMILY COMPANY: Is it a sound idea? At Whippany Paper Board Co., managed by 15 Desiderio brothers and their sons, it certainly has proven to be 47

SAND DUNE WELLS hold a treasure of sweet water for Menasha—and other companies that also might want to build mills on Oregon's forest-rich Coos Bay 50

CLEAN STREAMS: The second of two articles on pollution control tells how companies are extracting value from their 'wastes' 55

PER CAPITA CONSUMPTION is the key to demand; in this century it has accounted for three-quarters of the industry's growth 60

PULPWOOD WORLD: Tree-length logging sparks a lively discussion among the experts 67
Menasha uses an above-ground storage bin at new mill 70

DEPARTMENTS

Meetings 31
How to do it 49
New equipment 23, 90
Strictly personal 27
Literature 89
Staff listing 96
The last word 96

PULP & PAPER is published every other week by Miller Freeman Publications, Incorporated, Emmett Street, Bristol, Conn. Editorial & Executive Offices, 370 Lexington Ave., New York 17, New York. Second-class postage paid at Bristol, Conn.

RATES: Single copy 50¢. U.S. and Canada—1 yr., $5; 2 yrs., $8; 3 yrs., $10. Other countries—1 yr., $7; 2 yrs., $12; 3 yrs., $16. Sterling or any European funds may be sent to Miller Freeman Publications, 130 Crawford Street, London W. 1, England.

CIRCULATION DEPT., 500 Howard St., San Francisco 5, Calif., C. C. Baake, Circ. Mgr. Send subscription orders and changes of address to PULP & PAPER, above address. Include both old and new addresses.

POSTMASTER: Send form 3579 to Circ. Dept., PULP & PAPER.

Tile Tank Hi-Lo Pulper at Byron Weston Company

SOLVES LOW HEADROOM PROBLEM

Hi-Lo Pulper tile tank installation at Byron Weston Company, Dalton, Massachusetts.

The low speed rotor, with large curved blades, provides quick breaking and maximum circulation, forcing stock across the tank to the high speed rotor for defibering.

The notched blades of the high speed rotor, turning at an average tip speed of 7600' per minute, project only ¼" and use power most efficiently for defibering. The blades, held securely by duroid wedges, can be easily replaced.

In January of 1960 Byron Weston came to Jones with a special pulping problem. To produce their high grade cotton fibre papers Byron Weston uses a wide variety of hard-to-defibre furnish. They needed a pulper that could handle this furnish efficiently, but . . . here was the problem . . . they also needed a pulper which could be installed in 10′ headroom and still handle 35 tons per day.

Jones engineers solved both problems effectively with a specially designed tile tank Hi-Lo Pulper. It meets the limited headroom requirements without sacrificing the proven efficiency of the standard height stainless steel tank Hi-Lo.

Designed for batch or continuous pulping with low power consumption, the Jones Hi-Lo Pulper can be installed in areas where the headroom is as low as 6½′.

E. D. JONES CORP. · PITTSFIELD, MASS. · member BELOIT group

Jones

PULP MILL EQUIPMENT AND STOCK PREPARATION MACHINERY

Canadian Associates:
The Alexander Fleck Ltd.
75 Spencer Street, Ottawa

NEWS DIGEST...

Germans "invade" USA—reversing trend
which finds many USA firms building plants abroad. Famous Schoeller papermaking firm of West Germany joins Simpson-Lee Paper Co. as partner in a new $10,000,000 photographic paper mill to be built at Pulaski, Oswego county, N.Y., scheduled to start up in early 1963. Max Bardeen, president of Simpson-Lee, and his staff have had much experience in photo paper manufacture.

Containerboard price boost
is aimed at bettering profit position of converters, says one manufacturer. Move is not expected to have any effect on other paperboard grades, nor to spread to paper grades. But industry is heartened by rise in new construction starts, increase in consumer credit and employment. APPA report shows how many of industry's raw materials costs have changed since 1947. See "Business," page 9.

Six months production is higher
but not enough to gloat about. Pulp production was up about 50,000 tons; paper and board, 0.4% up to about 20,196,000 tons for first seven months. Export picture is still good. Pulp exports are up 10.4%; paper, board and products show an increase of 18.2%. See "Production," page 13.

New off-machine blade coater
is on the starting line at St. Regis Paper Co.'s mill at Bucksport, Me. West Virginia Pulp and Paper moves into the paraffin-carton field, spurred by favorable outlook for packaging. Encouraged by success of new grades such as Permalife, Standard Paper has invested $2 million in expansion program. See "Industry Growth" page 15.

Wilderness Bill may lose out
this session, even though the Senate may have approved it by now. The House has not held hearings yet. Even if it does, it may not get to vote on this issue. Although a spokesman for President Kennedy disagreed that Congress need await the Rockefeller outdoor recreation commission's report before acting, sentiment in the House is for doing just that. See "Pulpwood management," page 21.

New contacts for paper industry
have resulted from reorganization of the Dept. of Commerce's Business & Defense Services Administration. Thomas E. Drumm, Jr., is new BDSA Administrator, heading a staff of 600. He is a lawyer with 20 years in government. James Owens is head of a new main office—Industrial Materials. Other industry offices: Industrial Equipment and General Products and Services. Tom Mason succeeds Mr. Owens as director of Forest Products Division; LeRoy Neubrech moves up as assistant director, FPD. Mr. Mason's main interests continue in lumber; Mr. Neubrech's in pulp and paper. Divisions are reduced from 25 to 21. New offices—Industrial Growth and Research and Economic Programs have been formed; Office of Distribution becomes Marketing Services; Office of Technical Services continues.

...RESEARCH & TECHNOLOGY

Fresh Light on Lignin Riddle

Researchers and practical men get together for first time

THE RIDDLE OF LIGNIN structure, which for 100 years has baffled organic chemists, moved closer to solution at the International Lignin Symposium, held in Chicago in mid-August.

Advances were reported in studies that may be of future commercial importance. Since lignin, the "encrusting material" surrounding wood cellulose, was first discovered a century ago, it has come to be recognized more and more as an organic compound of great potential value. But millions of tons of lignin still are burned or sluiced into streams because no one has come up with any application of outstanding importance.

Of 145 scientists participating, over 20% came from Canada and Europe.

"Many opportunities
were provided for discussions between people who are doing basic research in lignin and people who are concerned with the practical aspects of buying and manufacturing," Dr. Harry F. Lewis, vice president, The Institute of Paper Chemistry, said of the meeting. Dr. Lewis led a panel discussion, "Where Do We Go from Here."

SPRAY DRYERS

. . . for the **best** in paper coating clays

First to spray-dry paper coating clays, MINERALS & CHEMICALS PHILIPP now provides twice the number of spray-drying units of any other coating clay producer.

This is the most precise method used today for drying paper coating clays. Drying is instantaneous, forms microspheroids of clay with a controlled moisture content that can be set as low as ½ of one percent. All four MCP spray dryers are completely instrumented. To the paper maker this means pure, quality-controlled clays of high bulk density, excellent handling properties, and ease of dispersion and make-down. MCP's fourth spray-drying unit offers even greater flexibility to provide a broad range of coating clays to meet individual customer needs.

We will be glad to show you what MCP Edgar spray-dried paper coating clays can do for your products. Write, or give us a call.

Edgar

EDGAR PAPER CLAYS from

MINERALS & CHEMICALS PHILIPP
CORPORATION

2233 ESSEX TURNPIKE MENLO PARK, NEW JERSEY

"This was the first time in the history of the "Lignin Round Tables" (this was No. 4) that these two groups had been brought together and it seemed quite successful," he continued. "There was great enthusiasm for a Fifth Lignin Round Table and the Wood Chemistry Committee of TAPPI, headed by J. R. Salveson, Marathon Division, American Can Co., Rothschild, Wisc., leans strongly in the direction of planning for the fifth meeting in 1964. Some members favored 1963." The first three Symposiums were at the Institute in Appleton, Wis.

Dr. Lewis told PULP & PAPER that thus far research has failed to isolate any single compound in lignin in a large enough quantity to make its production commercially attractive.

"Possibly with new tools this can be done," he added. "This suggests that our failures today may be interesting in 1980, with additional new tools."

Lignin in pulp is worth more in dollars and cents than in any other lignin utilization method so far discovered.

This was perhaps one of the most startling statements of the meeting. It was made by Dr. Gardner H. Chidester, director of the Pulp and Paper Division of the U.S. Forest Products Laboratory.

He presented statistics showing that 24% of the lignin in pulpwood was retained in the woodpulp manufactured in 1959 in the U.S. This totaled 2,375,000 tons, valued at $200,000,000 based on the value of the pulps. Lignin not used totalled 7,450,000 tons. Virtually all of this was burned or washed away. (There have been estimates in the past that a total of 20 million tons of lignin are burned or sluiced to streams). Dr. Chidester suggested more lignin could be used.

Percentage of total lignin utilized in unbleached kraft pulp is 36%, and in groundwood, 34%. It is only 2% in unbleached sulfite and cold soda pulp.

Dr. Chidester suggested that more lignin might be used in pulp, and that "an increase of only 1% of lignin, based on pulp produced annually at the current rate, represents about 160,000 tons of lignin at a value of $16 million."

Liquefaction of lignin by high pressure hydrogenation has been successful at Noguchi Institute in Japan. Regarded as a very significant development, it was reported by Dr. M. Oshima, co-author with Dr. K. Kashima of a paper on the subject.

Lewis

Salveson

DR. HARRY F. LEWIS, who headed final panel discussion, and J. R. SALVESON, whose TAPPI Wood Chemistry Committee under Dr. Lewis, took over sponsorship of Lignin Symposiums this year from Fundamental Research Committee, which sponsored the first three meetings.

The Japanese obtain very high yields of products that are largely phenolic in nature, according to the two chemists. Among the monophenol fractions are para-cresol, ortho-cresol, ethylphenol and propylphenol. Other forms of lignin can be used as raw material for this same process. A 30 kg. lignin-per-day pilot plant has been in use since 1956 and good results have been achieved.

A larger pilot plant utilizing 1,000 kg. of lignin per day is being subsidized by the Japanese government and associated industries.

The Japanese plant offers a means of producing compounds that are valuable intermediates in the manufacture of a large number of technical products.

In connection with the Japanese work, it was recalled that Dr. E. E. Harris, who is now at the Marathon plant in Wisconsin, carried on hydrogenation studies at the U.S. Forest Products Laboratory, followed by large-scale runs at the Bureau of Mines in 1938. He achieved essentially similar results as did the Japanese. Dr. Lewis commented that perhaps today, with the new tools, the isolation of a single compound in a sufficiently high yield to be commercially attractive may be near. This suggests that today's failures may indeed be even more interesting in 1980. On the other hand, the Japanese may end up where Dr. Harris did—unable to isolate an important compound in sufficiently high yield.

This special report is by ALBERT W. WILSON, Editor, PULP & PAPER, with valuable advice and assistance of DR. HARRY F. LEWIS, vice president, The Institute of Paper Chemistry, and chairman of TAPPI's research and development division.

Lignin utilization was the subject of short talks by four panelists, with Dr. Lewis as moderator. Each talked about phases of lignin use of interest to him.

Dr. Chidester discussed some limitations on using more lignin at present. They involve bleaching brightness and strength.

"We need a method of improving the color stability of lignin remaining in the pulp and eliminating its possible catalytic effect in the photochemical degradation of carbohydrates," he said.

"There is considerable evidence that unbleached hardwood semichemical pulps could be used as a partial substitute for unbleached softwood sulfite," Dr. Chidester noted. "Improved methods of mild chemical treatment and refining may well provide a more satisfactory fiber separation, along with more satisfactory strength development."

Dr. Irwin Pearl, The Institute of Paper Chemistry, summarized methods of using lignin, pointing out some important conclusions.

Dr. Robert Barnwell, chief chemist of the Robeson Process Co., Erie, Pa., represented the industrial converter and distributor of sulfite liquor on the panel. Dr. A. Bjorkman, of the Tekniske Hojskole, Copenhagen, Denmark, discussed the importance of sulfite liquor solids as fuel.

A "dramatic" technical paper which created something of a sensation was given by Dr. W. H. Gloz of Aschaffenburger Zellstoffwerke AG, one of the two biggest woodpulp producing companies in West Germany. He told of very severe restrictions and conditions in West Germany which control disposal of chemical waste liquor and require the utilization of spent sulfite effluent. In . . . turn to p. 76

ANNOUNCING...

Rex UNI-BARREL Drag Chain

increased stamina for Drag Conveyor Service

Welded, all-steel, sturdy Uni-Barrel design

Increased strength to handle unexpected overloads and shock—bonus wear-resistance to stay on the job longer—these were the objectives in developing the new Rex Uni-Barrel Drag Chain for the pulp and paper industries.

Now, after extensive research and on-the-job testing, this new Rex Uni-Barrel Drag Chain is ready to give you long life under the toughest service conditions!

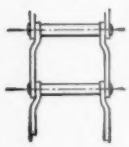
Just a glance tells you why this new chain introduces new efficiency and new freedom from down time to pulp and paper mills.

RUGGED REX UNI-BARREL DESIGN. The Rex Uni-Barrel is formed from heavy seamless steel tubing. This provides extra strength, not only strength from basic tube shape but also from dimensional accuracy which distributes strength and wear-resistance equally throughout the barrel.

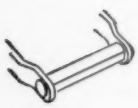
Abrasion resistant. Steel construction assures maximum strength and wear-resistance throughout. High-strength steel not only gives high load-carrying capacity, but it is also easy to weld, making field modifications and repairs fast and simple. The weld is sound and uniform throughout the chain. This assures an accurate balance of stamina within components as well as in the weld between side bars and Uni-Barrels.

Three-diameter pins of abrasion-resistant, heat-treated steel make assembly and disassembly easy, assures maximum strength and wear life.

Press-fits and mechanical locks eliminate wear in outer side bar holes—reducing wear throughout. Pins, press-fitted and mechanically locked into side bars, confine wear to large bearing area in the Uni-Barrel—eliminate fiddling- and flexing-wear in outer pitch holes.



Precise pitch control minimizes pin and side bar stress; side bar holes are accurately pierced and positioned. This, plus the dimensional accuracy of Uni-Barrel design, assures equal load distribution over every link.



Uni-Barrel face is coined for efficient carrying; Rex Uni-Barrel is shaped to hug trough—offsetting tendency to override conveyed materials.

Attachments easy to install. Since the side bar welds easily and is stronger, attachments are easy to put on and they stay put. No special welding techniques are required.

Turnover design allows chain to be turned over for added service life.

Fully replaces cast and combination mill chains —no need to change sprockets or troughs.

REX®
CHAIN BELT COMPANY

CHAIN Belt Company
4691 W. Greenfield Ave., Milwaukee 1, Wis.
(In Canada: Rex Chainbelt (Canada) Ltd., Toronto and Montreal)

Please send information on new Rex Drag Conveyor Chain.

Name .....

Address .....

City ..... Zone ..... State .....

Price rise helps box makers

Move follows linerboard reduction to improve profits for converters

NEW YORK—Behind the recent price increase on containerboard boxes is the contention that prices were so low as to constitute a give-away.

"We were fed up with giving them away," one manufacturer told PULP & PAPER. "There has been some pickup in volume and the market will stay competitive."

The boost is seen by another manufacturer as a move that will further strengthen the profit position of the converter. He says linerboard manufacturers were "making all the profits," and the recent cut in linerboard prices was aimed at a better balance in profits for the converter.

Hopes that this increase will improve the position of manufacturers of other paperboard grades, and that it might even push up paper prices, are not well founded, says one spokesman. If business keeps improving as it is doing, prices for all paper industry products—pulp, paper and paperboard—might be firmer for the fourth quarter, he adds.

Business is getting better as new construction, residential starts, consumer credit and employment continue on the way up. In July, new construction was at an annual rate of $58,683,000. Climbing from $4,409,000 in April, $4,903,000 in May and $5,362,000 in June, new construction reached $5,433,000 in July.

Prices and costs for 1947 and 1961 are compared in a special report just issued by the American Paper & Pulp Assn. A major finding is that, while the industry's sales, production, prices and worker productivity have risen strongly in the postwar period, key costs have been going up at least as rapidly.

For instance, southern pine logs sold for $14.42/cord in 1947, went up to $19.70, a 37% increase; spruce and true fir were $24.58/cord in 1947, reached $30.79/cord in 1958, a 25% rise. Bleached kraft pulp, $105/ton in 1947, is now $147/ton.

Aluminum sulfate, which sold for $1.14/cwt. in 1947, climbed 74% to $2/cwt. this year. In the same interval, caustic soda went from $2.90/cwt to $5.25/cwt., up 81%. Other changes: chlorine from $2/cwt. to $3.25, up 62%; salt cake from $20/ton to $34/ton, up 70%; soda ash from 1.08/cwt. to $1.55/cwt, up 44%; and sulfur from $16/ton to $23, up 47%.

Fuel costs, too, have gone up. Coal has risen from $86.6/ton to $112.5, up 30%, and oil from $96/ton to $113/ton, up 19%. Equipment costs have gone from 146.9 (using an index of 100 for 1926) to 228.6 in 1961.

Transportation costs of pulpwood have increased 19% from 1947 to 1960, climbing from $1.58 to $1.88. Woodpulp has moved up 78%, from $6.02 to $10.74 and according to one observer, the industry sees moves toward further increases. Printing paper transportation costs have increased 64%, from $8.73 to $14.30. Wrapping paper has gone up 55%, from $10.27 to $15.89; newsprint is up 61%, from $6.86 to $11.02; paperboard is up 52%, from $8.99 to $13.70.

Higher volume for the industry is envisaged by International Paper Co. in its six months report. Despite continuing pressure on earnings and previous price reductions for some grades, the company sees further improvement for the balance of the year.

The Seattle-First National Bank, in its quarterly review, also forecasts a reversal of the downtrend in paper products production. It adds, however, that the increase for the rest of the year is expected to be less than half the industry's long-term rate of growth. As a result of the slower growth rate, the report says, "the very competitive market situation and low profit margins will continue the rest of the year." ■

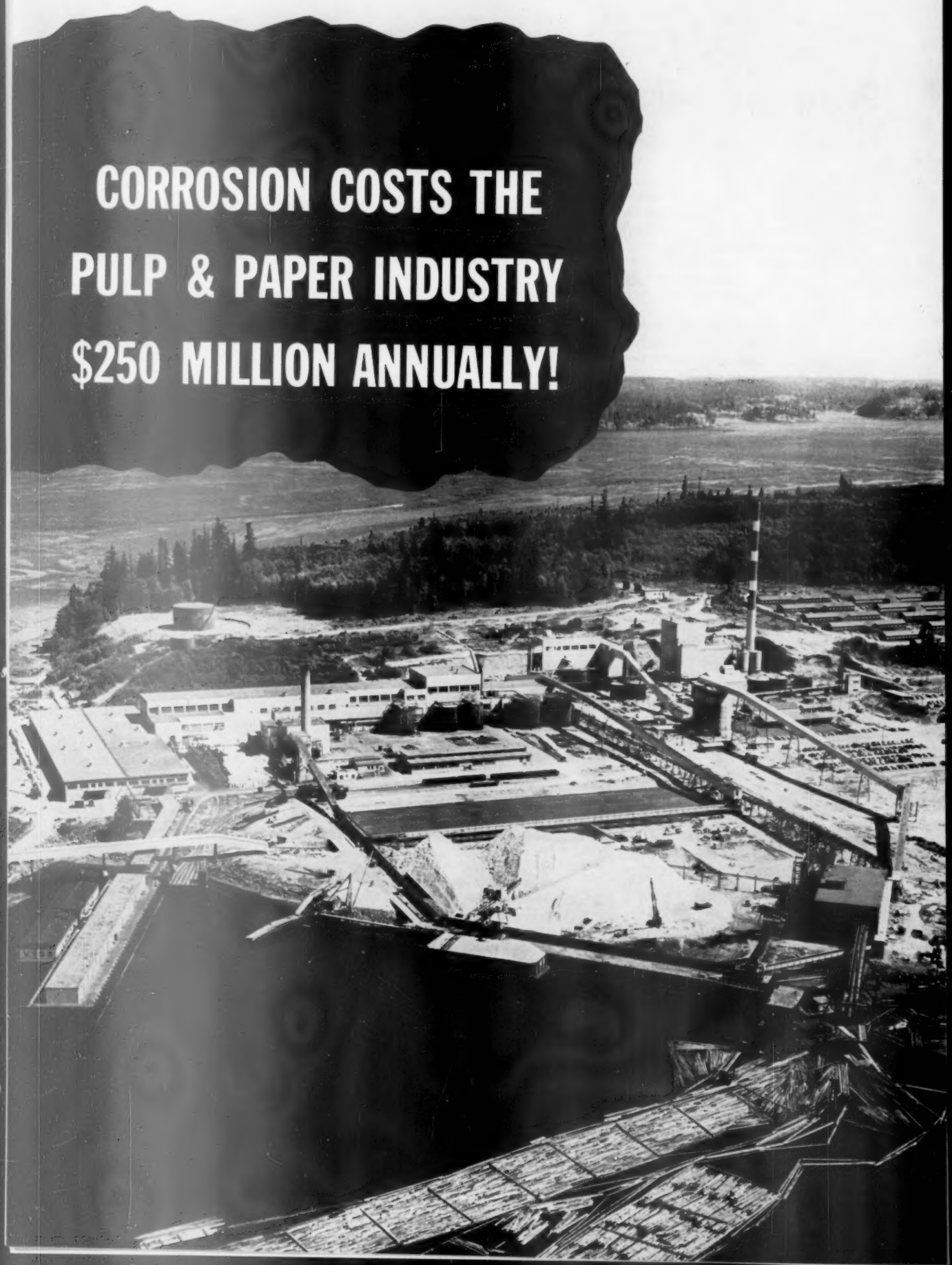
Sales & Earnings, First Half 1961

	Net Sales (000)	Income Bef. Taxes (000)	% of Sales	Net Income (000)	Net Per Share
Market Pulp (Also Lumber, etc.)					
Brown Co. (11/30)	$ 26,331	$ 622	2.4%	$ 379	$ .15
Georgia Pacific	107,449	10,786	10.0	768.6	1.20
MacMillan, Bloedel & Powell River, Ltd.	143,767	26,042	18.1	12,151	.58
Rayonier	64,690	6,252	10.0	3,734	.64
Northern Integrated Cos.					
Abitibi Power & Paper	71,300	12,689	17.8	5,912	1.36
Diamond National	108,196	n.a.		6,516	1.38
Fibreboard Paper	52,818	1,994	3.8	1,030	.57
Great Northern Paper	29,631	2,552	8.6	1,330	1.28
Hammermill Paper	37,761	2,014	5.3	1,088	.69
KVP (9/30) (9 mos.)	90,044	7,952	8.8	3,789	1.71
Warren, S.D.	38,964	6,223	16.0	3,007	1.40
Integrated—North & South					
Container Corp. of America	160,437	18,447	11.5	8,846	.81
Crown Zellerbach	275,515	n.a.		18,210	1.27
International Paper	510,753	68,028	13.3	36,541	.89
Kimberly Clark (4/30) (6 mos. from Oct. '60-Apr. '61)	207,083	30,407	14.7	15,163	1.62
Mead Corp.	166,602	10,980	6.6	5,631	1.05
Riegel Paper	51,291	3,359	6.5	1,577	.94
St. Regis	273,282	16,093	5.9	8,567	.72
Scott	163,037	28,324	17.4	13,959	1.68
Union Bag-Camp Paper	107,186	17,337	16.2	8,252	1.08
Non-Integrated Paper Co.					
American Writing Paper	7,766	n.a.		336	1.24
Convertor Co.					
Dennison Mfg.	19,438	1,299	6.7	637	.46*

* .46 on A com. and com.
n.a.—Not available

The sales and earnings for the first half of 1961 were especially prepared for PULP & PAPER by Cyrus J. Lawrence & Sons, members of the New York Stock Exchange, from statistical services and published reports. While the figures are believed to be correct, no guaranty is given as to their accuracy.

CORROSION COSTS THE PULP & PAPER INDUSTRY $250 MILLION ANNUALLY!



Now You Can Control 96% of All Your Pulp & Paper Corrosion Problems with this Proven PITT CHEM® Coating System!

Corrosion conditions in the pulp and paper industry are among the most severe and varied in all of industry. The use of water as a "raw material," plus the employment of many chemical reagents, results in an annual corrosion loss of a quarter of a billion dollars annually in this vital and basic industry.

Today, more and more pulp and paper plant maintenance engineers are turning to the *complete* PITT CHEM System of protective coatings to reduce this loss effectively and economically. Service-proven PITT CHEM coatings are saving thousands of dollars every day, protecting expensive processing and manufacturing equipment against moisture and virtually every chemical corrosion condition which exists in pulp and paper plants.

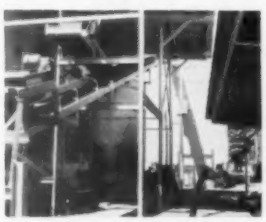
PITT CHEM Tarset, Tarmastic and Insul-Mastic are tough, *thick film* coatings that outlast conventional maintenance paints 10 to 20 times. You measure their protection in *decades*, not years. They can be cold-applied by brush, spray gun or roller. No other family of protective coatings can solve so *many* of your corrosion problems so *economically*.

For your personal corrosion data file complete the coupon below and return it today. Then consult your nearest PITT CHEM Distributor—he's listed in the "Yellow Pages." He'll be glad to discuss your corrosion problems with you, and work out a corrosion protection program to meet *your* requirements, without obligation.

PITT CHEM TARSET®

Tarset, the original, patented coal tar-epoxy coating, is now solving some of the severest corrosion problems encountered in the pulp and paper industry. This revolutionary cold-applied coating is ideal for the protection of tanks, pipelines, slurry tanks and waste systems handling acids and alkalis.

PITT CHEM TARMASTIC®



PITT CHEM Tarmastic coal tar coatings are a series of coatings designed to solve a wide variety of corrosive conditions at moderate cost. They are ideal for the protection of structural steel, fan housings, cooling towers, air ducts and concrete, stone or masonry foundations.

PITT CHEM INSUL-MASTIC®

A series of high quality Gilsonite-asphalt mastics widely used for many years for economical protection against atmospheric corrosion. Recommended for "thick-coating" protection of storage tank exteriors and other metal structures. Insul-Mastic cork mastics provide good insulating qualities and condensation control.

PITT CHEM PIPELINE ENAMELS

PITT CHEM Coal Tar Pipeline Enamels protect oil and gas transmission and distribution lines throughout the United States. These proven, high quality enamels are geared to meet a wide variety of underground service conditions and are backed by experienced technical field service.

PROTECTIVE COATINGS DIVISION

PITTSBURGH CHEMICAL CO.

GRANT BUILDING PITTSBURGH 19, PA.

A Subsidiary of PITTSBURGH COKE & CHEMICAL CO.

Send for Your Free Copy of this

PULP & PAPER CORROSION DATA FILE

Includes a survey of corrosion problems in the Pulp & Paper Industry, data on PITT CHEM Coating Systems and a coating selector guide.

Protective Coatings Division, Pittsburgh Chemical Co., Grant Bldg., Pittsburgh, Pa.

Name_____ Title_____

Company_____

Street_____

City_____ State_____

THE jet-cut AGE IS HERE!

super hard, wear resistant knives that deliver big production savings for you

Label plants, binderies and paper mills are getting sensational results with the Jet-Cut. They're getting TWO TO THREE TIMES MORE CUTS with the Jet-Cut, dust or drag is virtually eliminated and its smooth finish gives cleaner cuts with absolute accuracy. It's made by The Ohio Knife Co. of special high alloy tool steel, heat treated for super hardness and will fit all types of cutters. For complete information, write Dept. 125-F

"Ohio Knife Co. Jet-Cut knife gives an absolutely accurate, cleaner cut," says Jim Cole, General Superintendent, Multi-Colortype Co., Cincinnati, Ohio.

THE
OHIO KNIFE
COMPANY

CINCINNATI
OHIO / USA

MANUFACTURERS OF
PLANER, VENEER, CHIPPER,
AND SLITTER KNIVES.

.....PRODUCTION

Production inches ahead of last year

NEW YORK—The increase was there in pulp production in the first half, but you had to look hard to find it. The nation's mills produced some 12,893,173 tons, compared with 12,845,583 tons in the same period last year.

For the first seven months, paper production was 9,013,000 tons, about 0.4% less than in the 1960 period, while paperboard production was up slightly, about 1.3%, to 9,348,000 tons. Construction paper and paperboard production was 1,835,000 tons, down 0.3%. Over-all paper and paperboard production was up 0.4% to 20,196,000 tons. Data compiled by APPA.

Substantially higher exports were reported for the first six months, says APPA. Pulp exports were up 10.4% to 606,511 tons, against 549,350 tons in 1960. Paper, paperboard and products were ahead 18.2%, with 563,337 tons exported in the first six months of 1961, compared with 476,741 tons during the same time last year. Paper exports were up 10.5%, from 163,451 tons to 180,261 tons. Paperboard was up 19.7%, climbing from 234,491 tons to 280,590 tons.

Pulp exports broke this way: While shipments to domestic markets were down 5%, from 973,695 tons to 925,306 tons, for the first six months, shipments to Latin America rose 22% from 62,609 tons to 76,162 tons. Markets in Asia, Africa and Pacific countries took 26% more pulp, 113,541 tons compared with 143,542 tons. Shipments to Europe were off 1%, from 347,566 to 345,402 tons.

While June exports to Asia, Africa and the Pacific held up (38% ahead of last June), over-all shipments were down 25%. European markets took 36% less pulp in June, dropping from 90,083 tons to 57,789 tons. Latin American shipments were off 40% dropping from 16,183 tons to 9,746 tons.

Market pulp consumption in U.S. mills skidded 2.4% in June to 227,264 tons. First six months consumption was down 7.1% to 1,349,381 tons (1,453,286 tons in 1960).

Peak newsprint production was reported for North American mills in July. It was up 1.7% to 725,505 tons. Shipments were 716,249 tons, 0.1% less than in July, 1960, says the Newsprint Service Bureau.

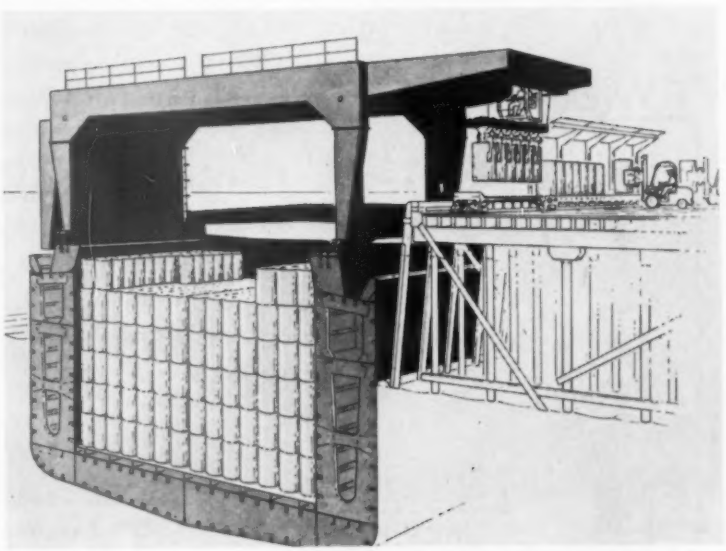
U.S. output in July also was an all-time high, 170,558 tons, an increase of 8.5%. Shipments were up to 163,574 tons, a 5% rise. Canadian production was 554,947 tons, 0.2% under what it was a year ago, while its shipments of 552,675 tons represented a decrease of 1.6%.

Production in North America for the first seven months of 1961 was also at an all-time peak, 5,101,976 tons. This was 1.9%, or 54,195 tons, above the year-ago level. U.S. mills had a record of 1,218,724 tons—a 3.3% increase, while Canadian production was 3,883,252 tons, 0.4% ahead of last year.

Folding carton shipments advanced strongly in July, says the Folding Box Assn. of America. Dollar volume was up 3% over July, 1960, and tonnage was up 2.5%. Volume for the first seven months of this year was only 1.5% below 1960, while tonnage trailed by 1.7%, according to the association. ■

.....TRANSPORTATION

For faster delivery of more newsprint



ALL-PURPOSE cargo ships have been ordered by Crown Zellerbach Corp. to speed delivery of newsprint and lumber from CZ Canada's Ocean Falls and Elk Falls mills. Capacity of each ship will be 8,800 tons of newsprint and 2 million bd. ft. of lumber. Three covered all-weather gentry carriages will serve six holds with deck-wide hatches. Wings on carriages will unfold and extend over dock unloading area for complete weather protection. Cranes can unload and load several rolls simultaneously.

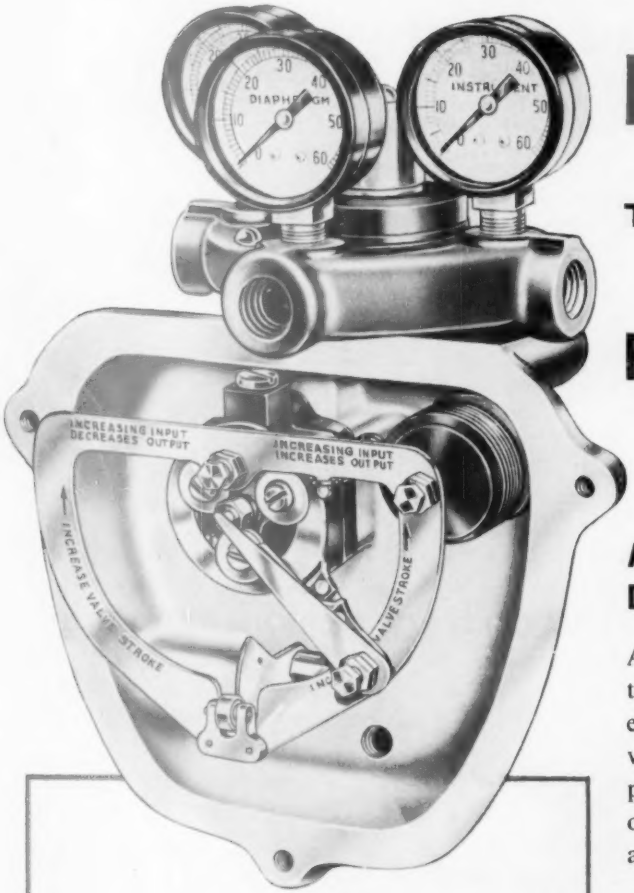
.....NEW PRODUCTS

Three firms stake out new markets

NEW YORK—Recent development of three products, most notable of which is a liquid container, underscores the industry's growing research activities directed at cornering new markets.

Bemis Bro. Bag Co., St. Louis, Mo., announces that, after several years study by its physical research department, it has developed and is market-

A new concept in design makes possible the...



FISHER

TYPE 3560 VALVE POSITIONER

V/P

Assured product performance through DYNAMIC ANALYSIS engineering

Application of mathematical techniques of design to pressure control systems has enabled Fisher to eliminate the conventional approach in the development of the new V/P valve positioner. It has provided the V/P with the following combination of characteristics and performance . . . unobtainable in any other type of valve positioner.

SMALL AND COMPACT . . . only 6⅜" wide and 8¾" high (with gauges).

CONVENIENT ADJUSTMENT . . . valve stroke and zero adjustment readily accessible and easy to make.

SPLIT RANGE . . . no parts change whatsoever is required for split range operation.

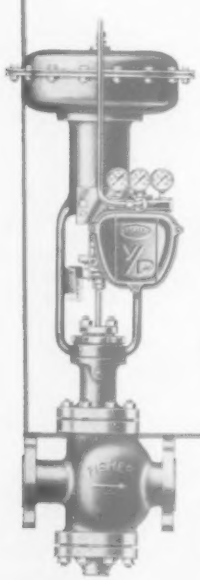
EASILY REVERSIBLE . . . reversed by simply moving flapper arm from one beam quadrant to the opposite quadrant.

CHARACTERIZED CAMS . . . offer wide flexibility in valve characteristics.

PERFORMANCE DATA

Hysteresis, (Average)	0.0012"
Linearity	as required. Change cams to obtain desired characteristics
Sensitivity	0.14 psi
Resolution Sensitivity	0.002 psi
Repeatability	±0.0003"
Stroking Speed	0.37 in/sec.
Air Consumption	10 scfh
Break Frequency (5% of instrument pressure range)	3.9 cps
Break Frequency (3% of instrument pressure range)	4.6 cps

The above performance data was taken from laboratory tests on a Type 657 diaphragm actuator, Size 40, with 1½" travel. Instrument range 3 to 15 psi.



Write today for Bulletin E-3560

IF IT FLOWS THROUGH PIPE ANYWHERE IN THE WORLD . . . CHANCES ARE IT'S CONTROLLED BY . . .

FISHER GOVERNOR COMPANY

Marshalltown, Iowa / Woodstock, Ontario / Rochester, England

BUTTERFLY VALVE DIVISION: CONTINENTAL EQUIPMENT COMPANY, CORAOPOLIS, PA.

FISHER® Controls

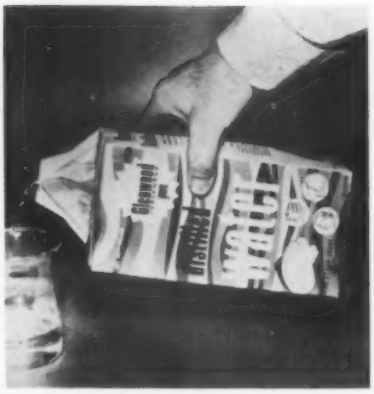
SINCE 1880

ing such a container. It is called a Liquatainer. At present the container is being used to package distilled and spring water.

Although the container is disposable, it can be re-used at home for noncarbonated juices and drinks.

Bemis says it has built a machine to fill and close the container at speeds of up to 10 cartons/minute. The machine can fill half-gallon and gallon packages. A three-man operation, one man feeds the empty carton, another seals the inner liner and the third loads filled cartons into the shipping container.

In a survey by PULP & PAPER, use of paperboard for the packaging liquids was mentioned by a majority of the respondents as an area of tremendous promise.



COMBINATION of bleached board and film liner are used by Bemis in their new liquid container, Liquatainer. Present market is for distilled and spring water.

Polyethylene coated paper is now providing permanent moisture vapor barrier, long needed for improved concrete slab construction in homes, schools and other buildings. Evaporated water, when condensed on cooler surfaces within a newly constructed building, results in peeling paint, wall stains, etc.

Solving the problem is a tough, moisture-controlling vapor barrier combining acid- and alkali-resistant polyethylene and rugged reinforced paper. Called Moistop, it is made by American Sisalkraft Co., Attleboro, Mass. Because uniform color dispersion in the film is necessary at low coating weights, American is using Petrothene 201-220 black pigmented polyethylene resin.

A bark mulch is the first product to come from the recently created product department of Southwest Forest Industries. Equipment for processing tree bark into a mulch for lawn care and general agricultural purposes is being installed at the company's pulp and paper mill in Snowflake Mills, Ariz., which will soon be in operation.

Says President J. B. Edens, "We're not waiting for the general uptrend in business to pick up and carry us along. We are creating new wood markets and uses. Our woods products development department will develop new products suitable to our production facilities, suggest by-products from our present operations and study methods of improving and increasing the yield from present products." ■

St. Regis readies blade coater start-up

BUCKSPORT, MAINE—A new high speed (3,000 fpm) off-machine trailing blade coater is all set for full production here at the Bucksport mill of St. Regis Paper Co. Dubbed The Downeaster by a St. Regis employe in a name-the-coater contest, the machine has a maximum width of 220 in., and will produce coated book grades from 25 to 60 lb. The Rice Barton coater climaxes a $8.6 million expansion and modernization program at Bucksport. It is the first off-machine blade coater at this mill which also produces coated publication grades for Time Inc. ■

MODERNIZED BUCKSPORT MILL has new roll grinder and off-machine coater buildings at left. New clay slurry structure is at right center in rear row.

Option dropped on Grande Prairie mill

VANCOUVER, B.C.—Canadian Forest Products, Ltd., Vancouver-based pulp-lumber-plywood enterprise, has decided not to take up its option on timber in the Grande Prairie district of Alberta and to abandon plans for a $50,000,000 pulp mill there.

Vice Pres. L. L. G. Bentley said that while present over-supply of pulp was a major factor, wood would have to be transported 63 miles overland from forest to mill site—three times the distance now covered in an average pulpwood haul for North Western Pulp & Power, Ltd., at Hinton, Alta., 200 miles south of Grande Prairie.

In addition, the pulp would have to be sold in the North American market since the distance from tidewater would preclude the possibility of export overseas.

Mr. Bentley said a large pulp mill in the Grande Prairie area might be feasible eventually, possibly in ten years, but his company could not afford to wait that long. In the meantime it will concentrate on its extensive operations in British Columbia and increase capacity at its plywood plant in Grande Prairie.

CFP had paid a group of Alberta businessmen about $40,000 for the option, and it would have paid them an additional $500,000 had the option been exercised. Deadline for taking up the option was August 18. ■

SEND FOR THIS NEW FOLDER...

from the world's largest manufacturer of paper tubes and cores!

Personalized service is available from Sonoco plants coast to coast!

Here's a helpful, informative folder—yours for the asking. Tells all about Sonoco paper mill cores, Sonoco metal ends and paper mill core machinery. It's loaded with size charts, illustrations and technical data. Order your file copy today!

Sonoco's 60 years' experience is coupled with research and a completely integrated manufacturing operation to produce the high quality, dependable cores of today. They are made to exacting torque and crush strength specifications. Non-returnable cores; in all sizes. Returnable cores, with or without famous Sonoco metal ends, are made in all standard sizes.

Regardless of your core needs, you'll get more for your core dollar from Sonoco in service, quality and economy.

SONOCO
Paper Mill Cores

SONOCO PRODUCTS COMPANY, HARTSVILLE, SOUTH CAROLINA
• Mystic, Conn. • Akron, Ind. • Ravenna, Ohio • Lowell, Mass. • Holyoke, Mass. • Phillipsburg, N. J. • Longview, Texas • Philadelphia, Pa. • La Puente, Calif. • Fremont, Calif. • Atlanta, Ga. • Richmond, Va. • **MEXICO:** Mexico, D. F. • **CANADA:** Brantford, Ont. • Granby, Quebec

MAIL THIS TODAY!

SONOCO PRODUCTS COMPANY
Hartsville, South Carolina

Please send me the free descriptive folder on Sonoco paper mill cores.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

3065

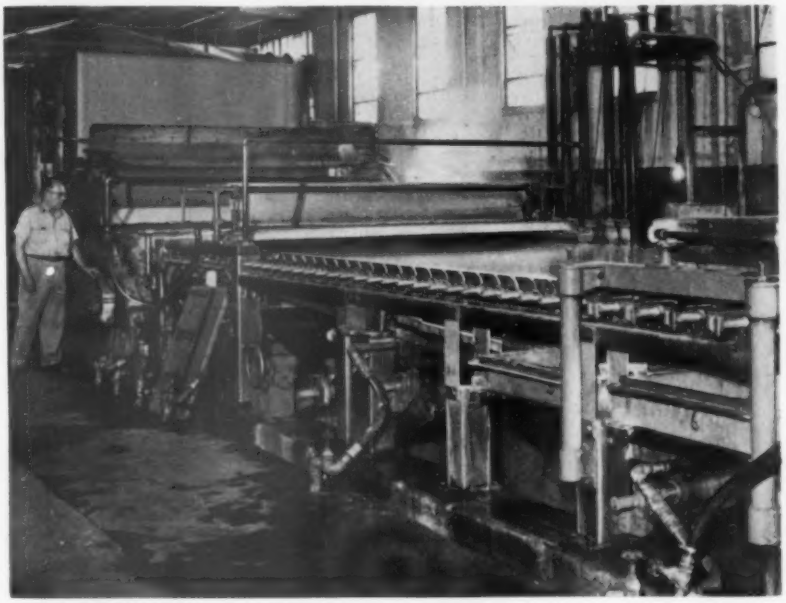
New grades spur growth at Standard Paper

RICHMOND, VA.—Encouraged by acceptance of its Permalife, a printing paper with laboratory proved longevity of more than 300 years, Standard Paper Mfg. Co. has invested more than $2 million in new equipment and plant modernization.

Latest step was installation by Standard Paper of a new corrosion-resistant Fourdrinier on its No. 2 paper machine. The Fourdrinier was built by The Sandy Hill Iron and Brass Works. Two new winders, built by the Dilts Div., The Black-Clawson Co., also were installed, as well as two Noble and Woods beaters.

The Fourdrinier is one of Sandy Hill's New Ideal models, which are comprised of standardized units. It has a 102-in. by 66-ft. 3-in. wire. The first table roll section, supported on fiber glass springs, is a shaking section, with the second section stationary.

The Noble and Wood 3,000-lb. capacity fast circulating beaters feature repetitive pass treatment with a flexibility of control, which permits maximum speed. ■



NON-REMOVABLE FOURDRINIER at Standard Paper Mfg. Co. is part of company's $2 million improvement program.

Hammermill and Rayonier form joint firm

HOQUIAM, WASH.—Grays Harbor Paper Co., jointly owned by Rayonier Inc. and Hammermill Paper Co., will take over ownership and operation of Rayonier's papermaking facilities here on completion of current expansion late this year. Grays Harbor Paper succeeds Grays Harbor Pulp & Paper Co., owned by Rayonier, which produces papers marketed by Hammermill.

Rayonier continues to operate the present paper mill until the end of construction. At that time Grays Harbor Paper Co. will take over all paper mill facilities and properties.

Ray F. Bower, who was named res. mgr. of Grays Harbor Paper Co. a year ago, will continue in that capacity, reporting to Fred E. Bahrenburg, vice pres.-mgr. of Hammermill mills. William S. Patten, Pacific Coast sales mgr. of Hammermill for Grays Harbor papers since 1952, continues in this capacity with the successor company.

Change-over arrangements for management from Rayonier to Grays Harbor Paper have been outlined as follows by Mr. Bower and L. M. McGinnis, res. mgr. of Rayonier:

Rayonier, to avoid costly duplication, will provide services to Grays Harbor Paper, including industrial relations, personnel, plant engineering, maintenance, purchasing. Paper mill employes salaries and wages will be on Grays Harbor Paper's payroll. Past service as now recognized by Rayonier will be accepted by Grays Harbor Paper; Rayonier employes transferred to Grays Harbor will retain retirement credits with Rayonier and will start accumulating credits with Grays Harbor Paper without a waiting period. ■

West Virginia enters paraffin carton field

Eyes expanding markets in dairy, meat, and frozen food fields

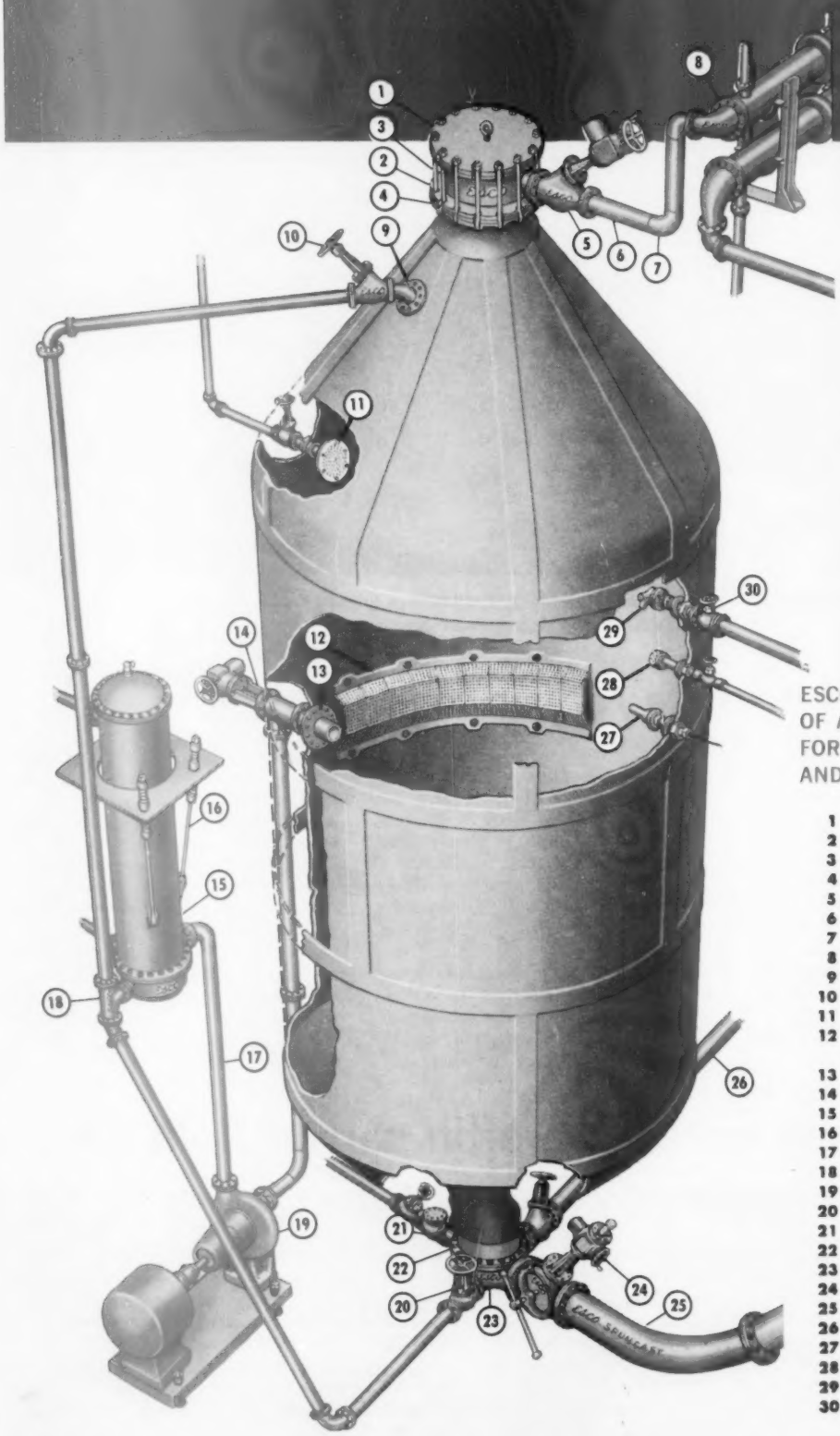
COVINGTON, VA.—The growing relationship between board manufacturers and carton producers, plus anticipation of a favorable long-range outlook for packaging, is behind West Virginia Pulp and Paper Co's. move into the field, explains E. Crawley Williams, manager of the bleached board division.

West Virginia has formed a paraffin carton segment, headed by John L. Bandelin, sales manager. J. Dudley Gardner will direct financial and administrative functions, and Nelson E. Zinn will head production.

West Virginia has just doubled the size of its subsidiary, Virginia Folding Box Co., at a cost of about $3 million. Virginia Folding, together with other converting facilities, provides the company with good facilities in major printing processes such as rotogravure, offset and letterpress.

Carton waxing will include methods of hot waxing, cold water waxing, high-gloss waxing and polyethylene coating. . . . turn to p. 21

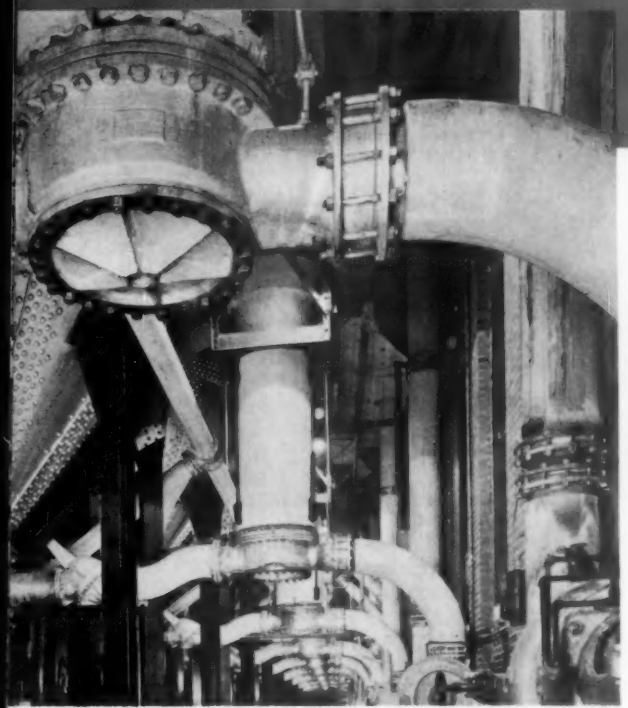
ESCO tailors complete pulp mill



ESCO OFFERS A COMPLETE LINE OF ALLOY STEEL COMPONENTS FOR EVERY PHASE OF PULP AND PAPER PRODUCTION

1 Cast Digester Cover
2 Top Relief Strainer and Body
3 Swing Bolts and Nuts
4 Top Neck Sleeve
5 Motor Operated Wye Valve
6 Relief Piping
7 Cast Butt Weld Fittings
8 Relief Gas Cooler
9 Dome Nozzle
10 Manual Wye Valve
11 Side Relief Fitting
12 Strainers, Supports, Cast Bolts, and Nuts
13 Saddle Nozzle
14 Motor Operated Angle Valve
15 Indirect Heater
16 Heater Supports
17 Circulating Piping
18 Cast Flanged Fittings and Flanges
19 Circulating Pump
20 Screw Down Swing Check Valve
21 Check Valve
22 Bottom Neck Sleeve
23 Blow Fitting
24 Motor Operated Blow Valve
25 Blow Line
26 Acid Piping
27 Thermometer Well
28 Pressure and Sample Fitting
29 Flushing Nozzles and Sleeves
30 Globe Valves

circulating systems to specific needs!



HIGHER PULP QUALITY, INCREASED PRODUCTION ARE YOURS WITH AN

ESCO

ENGINEERED SYSTEM

For 30 years, ESCO experience, research, and development have contributed significantly in solving the variety of heat, abrasion, and corrosion problems encountered in the pulp and paper industry.

The specialized knowledge gained by ESCO engineers is always available to help you solve your heat and corrosion problems.

Experienced technical personnel are available to design individual castings or complete systems to your special demands.

A complete selection of corrosion, heat and abrasion resistant cast alloys are also offered by ESCO.

Arrange today to have an ESCO representative call . . . or write for ESCO's Custom Alloy Steel Castings brochure.

ESCO

ESCO CORPORATION

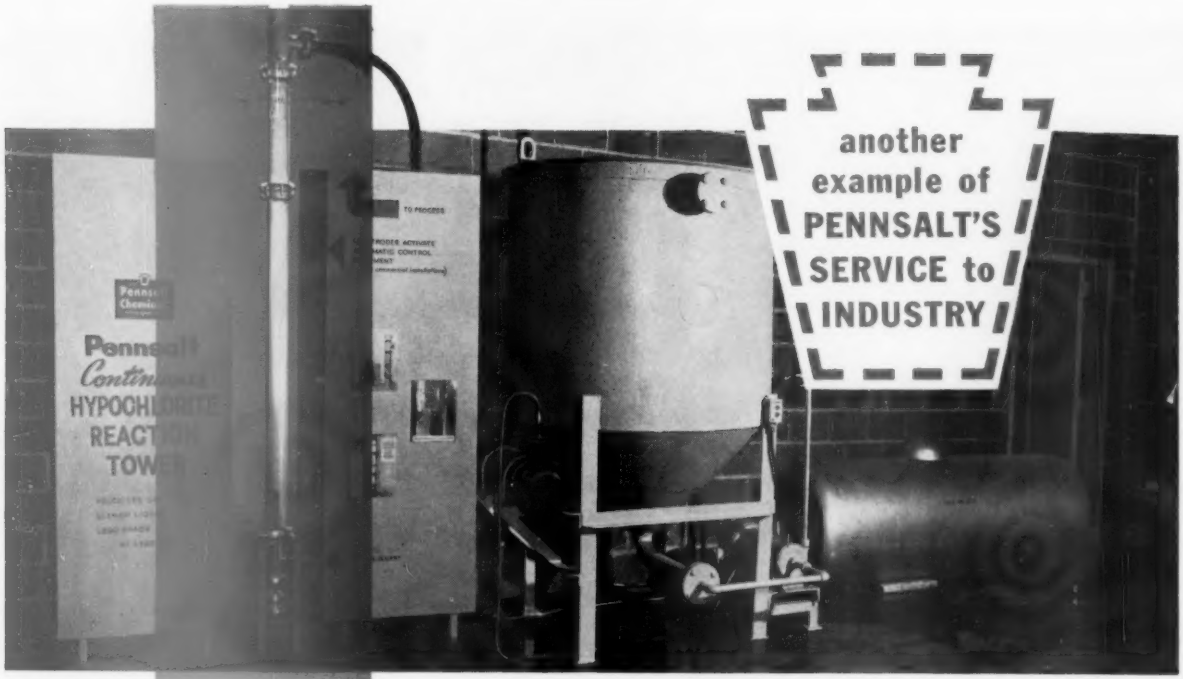
2167 N.W. 25th AVENUE • PORTLAND 10, OREGON

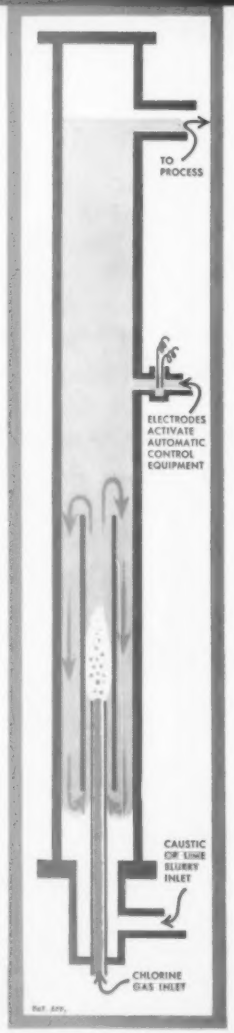
Mfg. Plants at Portland, Oregon, and Danville, Illinois

Offices in Most Principal Cities

ESCO International, New York, N.Y.

in Canada, ESCO Limited





A pilot plant was used by Pennsalt Engineers to study basic ideas of continuous sodium and calcium hypochlorite preparation.

PENNSALT CONTINUOUS HYPOCHLORITE REACTION TOWER

PRODUCES UNIFORM BLEACH LIQUOR FASTER, IN LESS SPACE, AT LESS COST THAN "BATCH" SYSTEM

The very satisfactory systems now offered were developed and tested under plant operating conditions, through the cooperation of mills which installed continuous systems. Capital expenditure, space, and labor can be saved in a new mill. Conventional batch plants can be modernized with labor saving and more efficient chemical usage by superimposing the continuous equipment on the present system.

IN YOUR PLANNING . . .

Pennsalt Technical Service engineers can help you in your initial planning of bleach facilities, selection of handling systems, and safe handling of chemicals. Phone or write PENNSALT CHEMICALS CORPORATION for Technical Bulletins.

20,000 TO 250,000 GALLONS BLEACH LIQUOR PER DAY . . .

Pennsalt Reaction Towers now installed at various mills, are producing from 20,000 to 250,000 gallons of bleach liquor per day. System brochures, flow diagrams and sketches are available to fit your particular needs.

Industrial Chemicals Division—West
Tacoma 1, Washington
Offices and Plants:
Los Angeles, Calif., Philadelphia, Pa.,
Portland, Ore., Vancouver, B. C. (CRestwood 8-8441)

PENNSALT CHLORINE and CAUSTIC SODA are made at Calvert City, Ky., Portland, Ore., Tacoma, Wash., Wyandotte, Mich., and Mexico City

Pennsalt Chemicals
ESTABLISHED 1850

West Virginia says it is the second largest producer of bleached board in the world. Principal markets include drinking cups, milk cartons, tobacco and pharmaceutical packaging, frozen food cartons, dry food and other sanitary food uses and moisture barrier packaging.

Price Brothers buys 156-in. machine

KENOGAMI, QUE.—A wide range of grades will be made on the new machine just ordered by Price Brothers & Co. Ltd. Designed primarily to produce 100 tons/day of 40 lb. kraft, the machine will also make grades ranging from 25-lb. paper to .009 and .016 board as well as newsprint.

Black-Clawson (Canada) Ltd. will build the machine, which will have a pressure headbox, a cantilever Fourdrinier, two suction presses and a size press and breaker stack.

Brown Co.'s tissue machine to have modular component drive

BERLIN, N.H.—The new 100-in. tissue machine, which will mark Brown Co's. entry into the 10- to 17-lb. tissue field, will use a new type sectional electric drive. Since great importance is attached to accuracy of the machine drive, high-gain regulators with Tri-nistor power amplifiers will be used. Two of the regulators will be the high accuracy type, having transistorized computer amplifiers. Maintenance and circuit checking will be simplified because of the drive's modular component design, the all static interchangeable regulators, and a minimum number of relay functions. Westinghouse Electric Corp. will build the drive.

Lily-Tulip Cup moves College Point plant to N.J.

HOLMDEL, N.J.—Within an hour's trucking distance from New York City, Lily-Tulip Cup Corp. plans to relocate a new 900,000-sq. ft. cup and container plant. The company's College Point, N.Y., and Bronx warehouse will be moved here, midway between the Amboys and Red Bank, N.J. Single-floor layout will permit more efficient operations.

B.C. government action may spur pulp mill

VANCOUVER, B.C.—Acquisition of British Columbia Electric Co. and Peace River Power Development Co. by the British Columbia government and the subsequent decision to go ahead with development of the Peace River power site may hasten establishment of one or more pulp mills in northern B.C.

The Peace River company was formed about three years ago by Axel Wenner Gren, Swedish industrialist, and associates. It was announced at that time that part of the over-all program was to build pulp mills in the Rocky Mountain Trench area.

Development of the Peace and Columbia rivers in B.C., representing an investment of more than $1,000,000,000, has been stalled by a hassle between the Canadian and B.C. governments, even though the U.S. had ratified the Columbia treaty and the Ottawa government had been ready to go.

The B.C. government's action has broken the stalemate, although Ottawa must still grant the right to export surplus power if the two rivers are to be harnessed simultaneously, as proposed, since B.C. alone could not absorb all the energy created.

Gould doubling surface sizing capacity

LYONS FALLS, N.Y.—Gould Paper Co. is shutting down its No. 2 paper machine, trimming 92 in. on Sept. 11 to install a horizontal size press and completely automated enzyme conversion starch makeup system. Also to be added: two high . . . turn to p. 78

APA backs Wilderness Bill amendments

WASHINGTON, D. C.—Four amendments to Wilderness Bill S. 174 proposed by Senator Gordon Allott (R.-Col.) would free from tight Presidential control millions of acres affected by the proposed bill.

In addition, Sen. Allott's legislation would keep open wilderness areas for mineral and water prospecting and utilization.

The amendments would:

(1) Retain areas currently designated "primitive" in the category until reviewed and recommended by the Secretary of Agriculture for inclusion in any wilderness system. The bill in its present form would "lock up" as wilderness without review 7.9 million acres in National Forests.

(2) Require concurrent legislation by Congress before any areas could become wilderness. Without this amendment, Congress would have only the power to approve a Presidential order on wilderness—not the right to veto such legislation.

(3) Require that lands recommended for wilderness by the Secretary of Agriculture or the Secretary of Interior to the President include recommendations of the governor of the state in which the lands are located. This sub-clause to the proposed bill also would require that the President send the governor's recommendations along with his own to Congress.

(4) Permit sub-surface development of water and mineral resources not incompatible with preservation of the wilderness environment. S. 174 allows only "prospecting for the gathering of information about mineral resources," and does not spell out inclusion of water resources under the "minerals" heading.

S. 174 also would include as wilderness 6.8 million acres now designated such in the National Forests. It would also include 22.1 million acres in National Parks, presently withdrawn from resource development but open to recreation. Another 28.3 million acres in National Wildlife Refuges and game ranges, presently yielding oil minerals and timber, would be closed to further development.

The industry and its spokesman, the American Pulpwood Assn., is opposing S. 174, as it now stands, because, they say that existing legislation is adequate, and also that it is not regulated entirely by Presidential order. Any further legislation would be premature, the industry maintains, since a complete wilderness survey is still being prepared by the Outdoor Recreation and Resources Review Commission. It's due Jan. 31.

APA says, if the bill is passed in its present form, those areas specified in it would be closed or restricted to general recreation, wildlife management, water shed development and protection, grazing, and mineral development. ■

POINT
IT
OUT
...WE'LL
MAKE
IT!

Whether your requirement in the Pacific Northwest is a digester, filtrate tank, chlorinator tower or other steel plate fabricated unit, American Pipe and Construction Co. can answer your need.

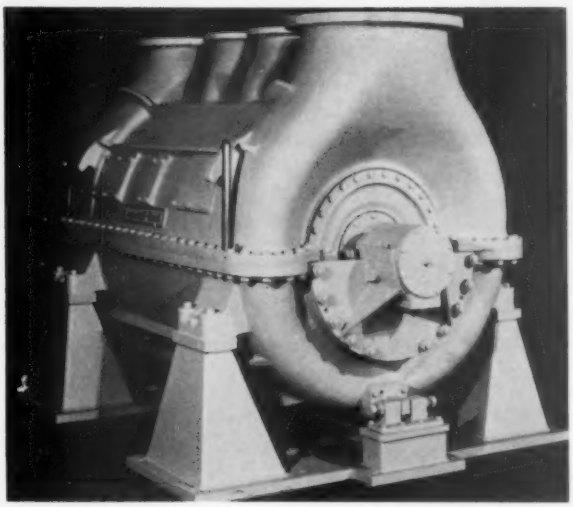
In its forty years of service to the Northwest, American has become recognized as one of the principal sources of supply for the fabrication and field erection of steel plate products. Highly skilled workmen, an outstanding engineering staff and a variety of shop and field testing methods guarantee precision and quality.

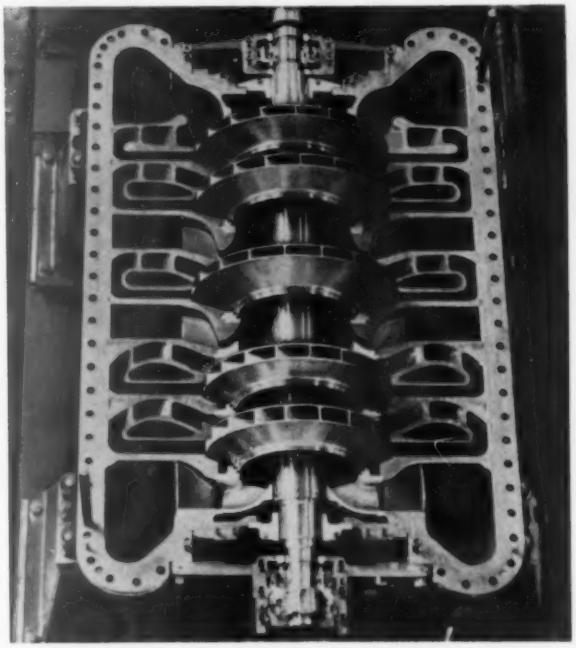
American Pipe and Construction Co. experience and facilities can be a major factor in solving your fabrication problems. Let an American sales engineer help you plan your next job.

American
PIPE AND CONSTRUCTION CO.

NORTHWEST DIVISION
518 N.E. Columbia Boulevard • Portland, Oregon
For literature or service in the Northwest write or call:
PORTLAND: P.O. Box 1898, Piedmont Station, Portland 11, Oregon : BUtler 5-2531
SEATTLE: ADams 2-1336

Central vacuum system reduces hp needs





PHILLIPSBURG, N.J.—A centrifugal exhauster that removes water at equal pressure across the web, and also provides heated air for the drying operation, now is available to papermakers. It removes water from web and provides heated air for drying paper.

This single unit with a 20-in. vacuum—reportedly the first produced in the U.S.—does the work of six or more individual pumps the manufacturer says. It operates under wide vacuum and suction variables. Horsepower used is proportional to vacuum required, which reduces paper machine hp needs by as much as 25%, the manufacturer adds. (Positive displacement pumps, in common use today, are rated at a set volume and hp.) From 70% to 90% of exhauster hp can be used as hot air for drying. The exhauster raises temperatures of discharged air to 300-350F. Discharged air is dry since seal water is not needed.

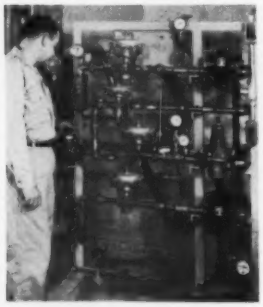
Two-stage separators remove entrained and suspended particles, permitting recovery of white liquor. Pressure differential induced across the sheet at the wet end is automatically controlled at all points of the sheet. During a paper break, the machine will not lose vacuum at flat boxes or couch roll. Outages are not so costly, the company says, because of more efficient operation. The rotor is the only moving part. The casing is split horizontally for maintenance ease.

With a minor vacuum decrease, or design of a special turbine, the machine will handle extra capacity. Four input-output ducts can be designed to customer specifications, and a reserve hp capacity can be engineered into the exhauster for future needs. The manufacturer says the machine is competitively priced.

Supplier: **Ingersoll-Rand Co., Phillipsburg, N.J.**

Starch cooker

. . . continuous or intermittent



Features: New type continuous starch cooker will operate either full time, or respond automatically to process demands. Operator selects continuous or intermittent operation by pressing a button. Unit is capable of either partial or complete disruption of starch granules.

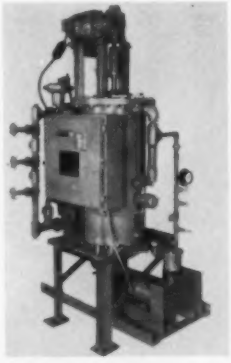
Automatic features assure uniform cooking, exact control of dilution water, or modifying ingredients, and final composition of preparations.

Specifications: In addition to basic cooker elements, which consists of a steamline, slurry line, and tangential injection heater, a series of accessory components are available for automatic thermal or mechanical modification. Heart of the new cooker is a specially-designed tangential injection steam heater, which injects steam directly into the moving slurry for instantaneous gelatinization. Compact unit occupies 6 sq. ft. Prices range from $300 to $3,000.

Supplier: **Industrial Div., Corn Products Sales Co., 10 East 56 St., New York 22, N.Y.**

Airevac

. . . removes air from coating



Applications: To remove air from coating solutions.

Features: Developed by S. D. Warren Co., and first dis- . . . **turn to p. 90**

FALK INTRODUCES 2 NEW SERIES OF VERSATILE SPEED REDUCERS

Designed to serve industry's current and future requirements

Type YB
Right Angle Horizontal
(write for Bulletin 2100)

Type Y Parallel Shaft
(write for Bulletin 1100)

Parallel Shaft and Right Angle Horizontal Reducers cataloged thru 1,570,000 lb-in. torque at low speed shaft ...larger units upon request. Ratios 1.84 thru 292 to 1 for parallel shaft; 5.06 thru 1207 to 1 for right angle horizontal

These new units are probably the most thoroughly engineered speed reducers on the market today. Final designs based upon years of development study and a background of 50 years experience make these units as dependable as the name "FALK". A few of their many features are...

PINPOINT APPLICATION COVERAGE Wide choice of sizes and ratios permits the most economical selection of a correctly rated unit for each application. In each series of parallel shaft and right angle reducers, cataloged sizes range up to 1,570,000 lb-in. torque at the (11 inch dia.) low speed shaft. (Other standard designs to 25,000,000 lb-in. torque; custom designs for higher capacities.)

UNMATCHED VERSATILITY The "Basic Y" speed reducer design permits economical modification to meet a multitude of specific requirements. Smooth, flat surfaces simplify mounting of motor brackets, backstops, brakes, and any number of other accessories.

RUGGED HOUSINGS Sturdy housings not only provide maximum rigidity to maintain proper alignment of gearing, but also have the strength to support heavy overhung loads and withstand accidental blows.

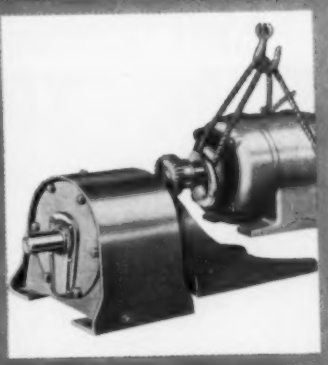
DEPENDABLE FALK GEARING Gears are selected with the proper proportions and hardness to provide the optimum combination of maximum durability and strength for high shock as well as uniform loads.

BEARINGS TO SUIT THE OVERHUNG LOAD Standard reducers can meet custom-built requirements with optional stock bearings and shafts (at only a nominal extra charge.) Maximum overhung load capacities are so great that for some conditions, still within the capacity of the reducer, extra strong supporting foundations and bolts must be provided.

DOUBLE GEAR LIFE Standard double ended shafts can be reversed end for end to bring into contact the unused surfaces of the gear teeth for twice the normal gear life.

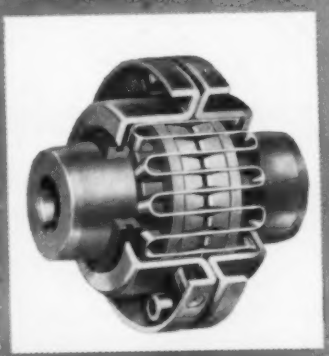
SEALS FOR ALL CONDITIONS Standard equipment oil seals assure oil-tight and dirt-free gear units for normal applications. Standard abrasive and moisture-resistant seals available upon order.

SOME OTHER MEMBERS OF AMERICA'S FIRST FAMILY OF POWER TRANSMISSION PRODUCTS



ALL-MOTOR MOTOREDUCERS

SHAFT MOUNTED DRIVES



STEELFLEX COUPLINGS

THE FALK CORPORATION, MILWAUKEE 1, WISCONSIN

MANUFACTURERS OF QUALITY GEAR DRIVES AND FLEXIBLE SHAFT COUPLINGS

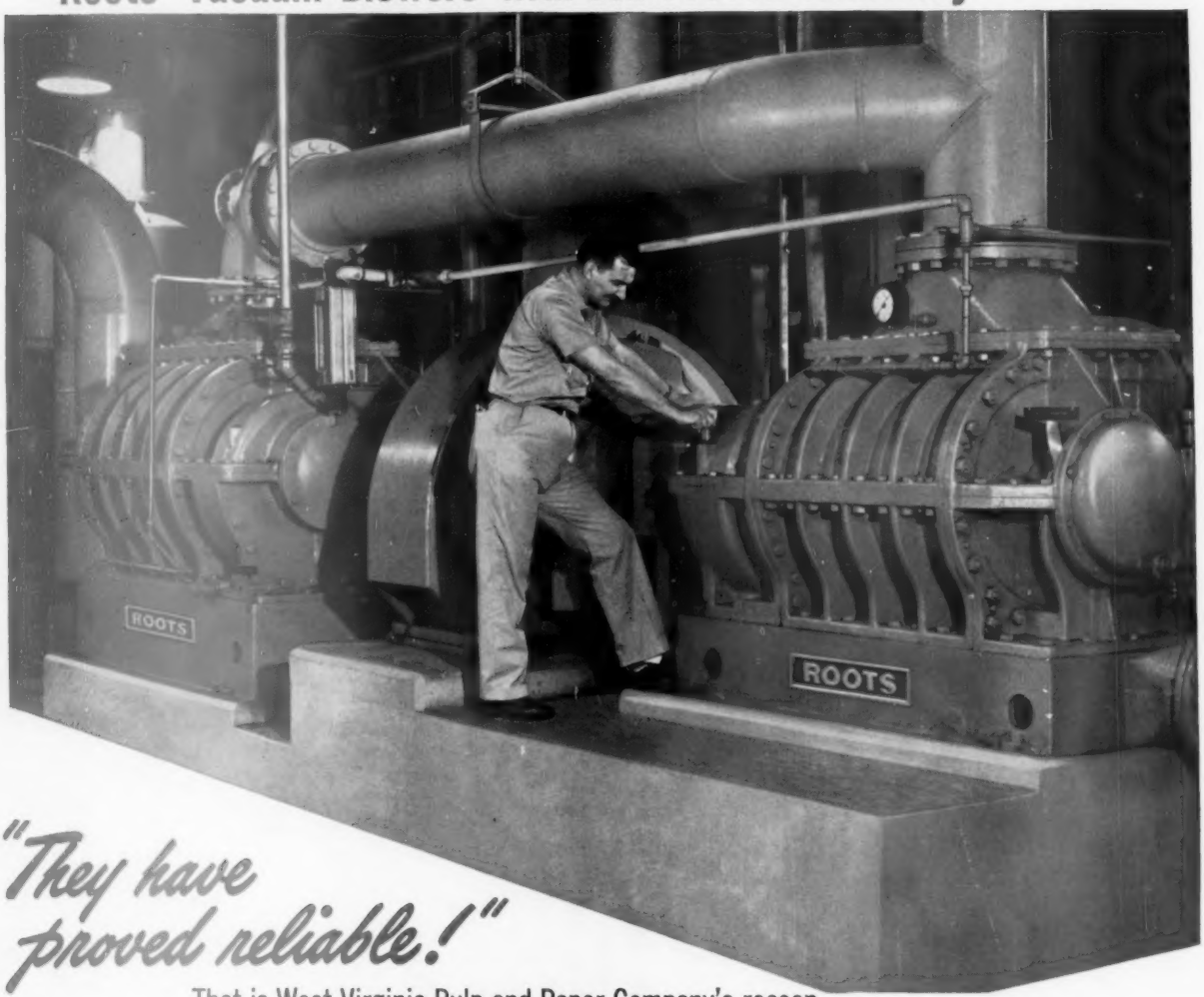
Representatives and Distributors in most principal cities

FALK

A GOOD NAME IN INDUSTRY

FALK, ALL-MOTOR, and STEELFLEX are registered trademarks

Roots® Vacuum Blowers with Job-Proved Reliability



"They have proved reliable!"

That is West Virginia Pulp and Paper Company's reason for specifying steam-turbine-driven RCV Blowers for vacuum service on two new machines being installed at its Luke, Md. plant.

Eleven years ago, West Virginia Pulp and Paper installed its first Roots Blowers for couch service in the company's Charleston, South Carolina plant. Since then, RCV units have been installed in expansions at Charleston (shown above) and at Mechanicville, New York. They have all given dependable vacuum service.

Reliability is inherent in a Roots Blower. Simple, sound rotary-positive-displacement operation uses two accurately balanced impellers mounted on rugged shafts carried in heavy bearings. There are no valves, vanes or other components to get out of order.

RCV Blowers are economical, too. First cost is low and installation is easier, with straight-through drive for economical compounding. Greater volumetric efficiency and higher speeds provide greater capacity with lower power consumption. For important water savings, a Roots unit uses only about one-tenth the amount of sealing water usually required.

Roots' complete line of Blowers for Vacuum Service to 27" Hg, includes single and compound units with capacities from 30 CFM to 15,000 CFM. For complete information on the blower for *your* vacuum requirements, call your Roots representative or write.

ROOTS-CONNERSVILLE BLOWER DIVISION • 900 W. MOUNT ST., CONNERSVILLE, INDIANA
In Canada—Roots-Connersville Blower (Canada), Ltd. • 212 King Street, West, Toronto

CLARK — Engines, Compressors, Gas Turbines

Working together in allied industries . . .

PODBIELNIAK — Centrifugal Contactors, Distillation Apparatus, Instrumentation

ROOTS CONNERSVILLE — Rotary Positive Blowers & Meters • Gas Pumps • Vacuum Blowers • Separable Compressors • Centrifugal Blowers

DRESSER INDUSTRIES INC.
OIL • GAS • CHEMICAL
ELECTRONIC • INDUSTRIAL

Crown Z promotes two in Oregon division

SAN FRANCISCO—Leland A. Kelson, formerly paper machine shift foreman for wrapping papers in the Camas, Washington, mill division, has been promoted to resident manager of the Lebanon, Oregon, mill division. Clarence E. Englund, resident manager of the Lebanon mill division is now assistant resident manager at the West Linn, Oregon mill division.

Mr. Kelson, is a Stanford Univ. 1949 industrial engineering graduate with a 1951 master's in business administration. He joined Crown Zellerbach as an industrial engineer in 1955 at Camas, became sulfite mill shift foreman the next year, and in 1959 technical assistant to the paper mill supt tissues.

Mr. Englund graduated from the Univ. of Washington in 1932 with an m.e. He joined CZ that year as technical assistant to the steam supt. at Port Townsend and in 1953 was assigned to Lebanon as technical assistant to the steam and power supt. He was made power plant supt. in 1959 of the St. Helens, Oregon, mill division and in 1960 came to Lebanon as resident manager. ■

Champion promotes three in Ohio Division

HAMILTON, OHIO—Ohio Division of Champion Papers Inc. has moved three men to new positions.

Robert O. Stephenson now is assistant Ohio Division manager. William E. Larson has been named acting production manager, and Perry W. Bartsch has been appointed acting manager of finishing departments.

Mr. Stephenson, who joined Champion in 1931, and whose recent post was Ohio Division production manager, will assist Earl C. Jones, division manager. Mr. Stephenson became inspection dept. supervisor in 1938, and asst. production manager in 1952. He is a 4th vice president of PIMA.

Mr. Larson joined the company in 1933 as a technical services engineer. In 1956 he was named technical advisor to the mill supt., in 1958 manager of slush pulping, fibrous and chemical preparation, and wet end control depts. and in 1960 manager of process controls dept. He is a member of Ohio Section TAPPI education committee.

STEPHENSON LARSON BARTSCH

Mr. Bartsch came to the Ohio Division from the post of assistant manager in the finishing division at the company's general offices. He first joined Champion organization in 1959 and has helped plan the modernization of the company-wide finishing operations. ■

Kuhlman Joins East Texas P&P

SILSBEE, TEX.—M. G. Kuhlman has been named technical director for East Texas Pulp and Paper Co. here. He joins the company after five years in a similar post with Potlatch Forests, Inc., Lewiston, Idaho. Mr. Kuhlman replaces J. B. Beck, who resigned July 12, to accept another position.

A native of Wausau, Wis., Mr. Kuhlman attended the University of Wisconsin from which he was graduated in 1934 with a chemical engineering degree.

He worked as a research chemist for Marathon Corp. for several years after graduation, and has held posts with North American Pulp and Paper Corp., Sheboygan, Mich., Ohio Boxboard Co., Rittman, Ohio, and Fleming and Sons Dallas, Tex. ■

KUHLMAN

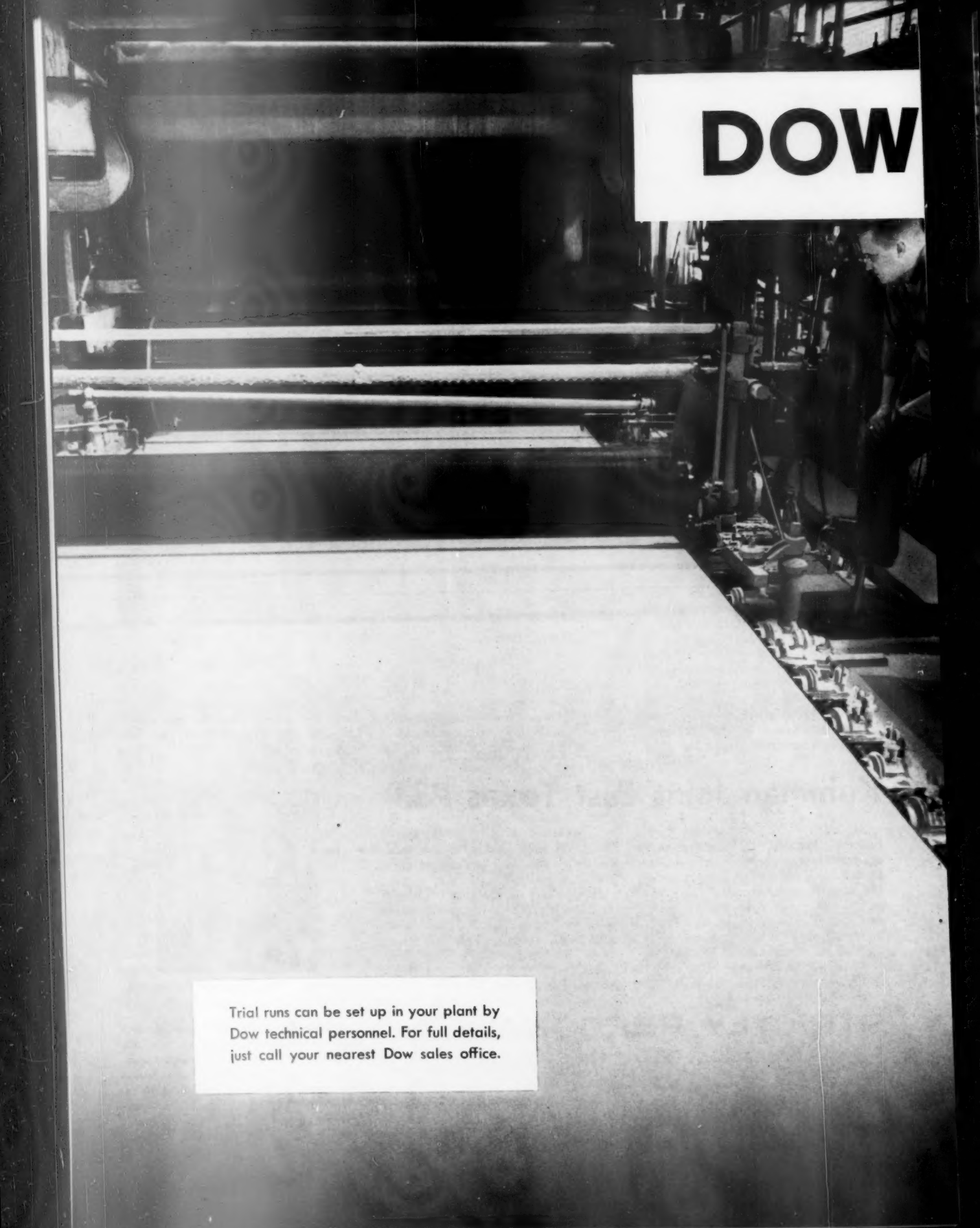
STRICTLY PERSONAL . . .

East

Lawrence L. Ellis has been appointed administrative assistant to the gen. mgr., Standard Packaging Corp's Mills Group, Colin Gardner III. The Mills Group includes the Eastern fine paper and pulp division, chemical fine paper and board division and Missisquoi specialty board division.

Les Poole has been appointed controller, and **Roger Congdon** named assistant controller, Crocker-Burbank & Co. Ass'cn.

Owens-Illinois has made three promotions in its paper products division. **Eli Fradkin,** production manager at the company's Long Island City plant, assumes the same position at the Bristol, Pa. plant. **William H. Forrester,** formerly plant supt. at Long Island City, succeeds Mr. Fradkin. **John H. Reeves** succeeds Mr. Forrester. . . . turn to p. 82



Trial runs can be set up in your plant by Dow technical personnel. For full details, just call your nearest Dow sales office.

paper processing chemicals

SEPARAN POLYMERS

INCREASED RETENTION WITH SEPARAN SAVES $2 TO $15 PER TON IN FILLER COSTS

SEPARAN® NP10 shows a remarkable ability to attach pigments and fillers to cellulose fibers. Applying this property to paper making has resulted in substantial increases in filler retention with savings in valuable pigment and filler costs.

The chart shows typical improvements with several sheet types. The net savings were calculated by subtracting the cost of the Separan NP10 used from the value of the filler saved.

Improved retention decreases the save-all load, headbox consistency, two sidedness, pinholes, wire abrasion and felt plugging. Hence, it contributes to improved formation and better machine operation.

Process water treatment is another area where Separan products can improve operations. Although Separan does not replace primary flocculants such as alum, it does reduce the amount needed. Separan NP10 does, however, act as a secondary coagulant which improves settling rates and clarity in primary water treatment.

Separan products are high molecular weight, water soluble polymers. Solutions can be easily prepared and handled.

If you are not already using Separan, make an appointment for a trial run in your own plant with technical assistance from Dow. They will furnish proportioning pumps to make the trials convenient and consistent with your present operation. Just call your nearest Dow sales office.

Lowest Mill Results	SEPARAN NP10 lb. / ton	CLAY lb. / ton	TiO_2 lb. / ton	ASH %	OPACITY %	NET SAVINGS $ / ton WITH SEPARAN NP10
55 lb. ENVELOPE	NONE	550	0	7.3	88.0	
	0.5	310	0	10.3	90.2	$4.30
30 lb. MAGAZINE	NONE	600	0	14.8	74.0	
	0.4	375	0	14.1	74.8	$4.10
60 lb. OFFSET BOND	NONE	550	30	12.2	92.0	
	0.5	400	30	13.7	93.0	$2.50
25 lb. MACHINE COATED CARTON WRAP	NONE	50	150	12.2	77.0	
	0.75	80	125	13.2	78.0	$5.50
50 lb. OFFSET BOND	NONE	370	145	9.6	89.0	
	0.5	145	100	12.6	90.5	$15.15

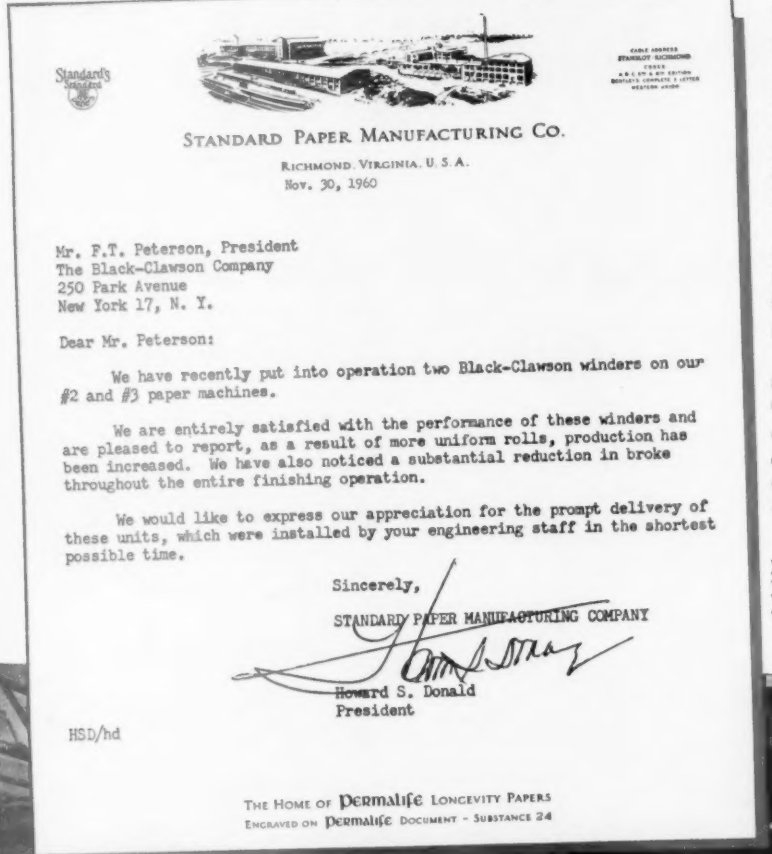
THIRTEEN LOCATIONS COUNTRY-WIDE ASSURE PROMPT DELIVERY OF DOW CAUSTIC SODA

To serve you better, Dow Caustic Soda Solution 50% is available when, where, and how you want it from thirteen shipping points throughout the country. Fast delivery is assured via tank car and tank truck from four producing plants—Midland, Mich.; Freeport, Texas; Plaquemine, La.; and Pittsburg, Calif.; plus nine terminals—N. Charleston, S. C.; Carteret and Bayonne, N. J.; Denver, Colo.; Grants, N. Mex.; Chicago, Ill.; Los Angeles, Calif.; St. Louis, Mo., and Baltimore, Md. All provide tank truck and tank car shipments. For more information, call your nearest Dow Sales Office or write THE DOW CHEMICAL COMPANY, Midland, Michigan.

THE DOW CHEMICAL COMPANY DOW Midland, Michigan

TD-12 Slitter-Winders

Increase Production at Standard Paper Manufacturing Co.



STANDARD PAPER MANUFACTURING CO.

RICHMOND, VIRGINIA, U. S. A.

Nov. 30, 1960

Mr. F.T. Peterson, President
The Black-Clawson Company
250 Park Avenue
New York 17, N. Y.

Dear Mr. Peterson:

We have recently put into operation two Black-Clawson winders on our #2 and #3 paper machines.

We are entirely satisfied with the performance of these winders and are pleased to report, as a result of more uniform rolls, production has been increased. We have also noticed a substantial reduction in broke throughout the entire finishing operation.

We would like to express our appreciation for the prompt delivery of these units, which were installed by your engineering staff in the shortest possible time.

Sincerely,

STANDARD PAPER MANUFACTURING COMPANY

Howard S. Donald
President

HSD/hd

THE HOME OF Permalife LONGEVITY PAPERS
ENGRAVED ON Permalife DOCUMENT - SUBSTANCE 24

These two TD-12 Slitter-Winders are proving their value daily at Standard Paper Manufacturing Company, manufacturers of a wide variety of specialty items, plain and coated blotting paper, offset book, text, writing, mimeo, ledger index, cover, greeting card, filter and impregnating papers.

Both are shear cut units utilizing dual shift front shear support, tooth belt main drive, rear shear drive and Black-Clawson's patented air-operated automatic riding roll pressure relief.

More uniform rolls and less broke such as Standard Paper Manufacturing Co. has experienced are advantages every mill would like to have. Because of superior design features, Black-Clawson TD Slitter-Winders provide them every time.

Perhaps you too can benefit from improved slitting and rewinding. Why not look into it. Get in touch with Dilts Division, Fulton, N. Y. LYric 2-4265.

DILTS DIVISION
Fulton, New York
CONVERT WITH CONFIDENCE

BLACK-CLAWSON

MEETINGS

. . . September

TAPPI, 11th Corrugated Container Conference, St. Francis Hotel, San Francisco, Calif.—Sept. 6-8

Pacific TAPPI, seminar, Portland, Ore.—Sept. 18-19

CPPA, TAPPI, Fourth International Mechanical Pulping Conference, Edgewater Beach Hotel, Chicago—Sept. 19-21

NW Div. PIMA, fall meeting, Faust Hotel, Rockford, Ill.—Sept. 20-22

Forest Land Use Conference, Shoreham Hotel, Washington, D. C.—Sept. 21-22

Pacific TAPPI, seminar, Seattle, Wash.—Sept. 21-22

Northeastern Div. PIMA, Poland Spring House, Poland Spring, Me.—Sept. 21-23

Paper Mill Men's Club of Southern California, 26th Annual Hi-Jinks, Fox Hills Country Club, Los Angeles, Calif.—Sept. 22

British Paper and Board Makers Assn., International Fiber Bonding Symposium, Oxford, England—Sept. 25-29

. . . October

TAPPI Deinking Conference, Hotel Harris, Kalamazoo, Mich. Oct. 4-6

PIMA Conn. Valley-TAPPI N.E. Section Joint Conference, Equinox House, Manchester, Vt.—Oct. 5-7

Water Pollution Control Federation 34th Annual Technical Meetings and Manufacturers' Exhibits (with Industrial Wastes Forum and Sessions), Milwaukee Auditorium and Schroeder Hotel, Milwaukee, Wis.—Oct. 8-12

TAPPI, plastics paper conference, French Lick Sheraton, French Lick Springs, Ind.—Oct. 9-11

Southeastern & Southern Divs., PIMA annual fall joint meeting, Jung Hotel, New Orleans, La.—Oct. 11-13

Pennsylvania - New Jersey - Delaware PIMA, fall meeting, Claridge Hotel, Atlantic City, N. J. —Oct. 12-14

TAPPI Annual Engineering Conference, Shoreham Hotel, Washington, D. C.—Oct. 15-19

National Safety Congress, annual meeting, Hotel Hilton, Chicago, Ill.—Oct. 16-20

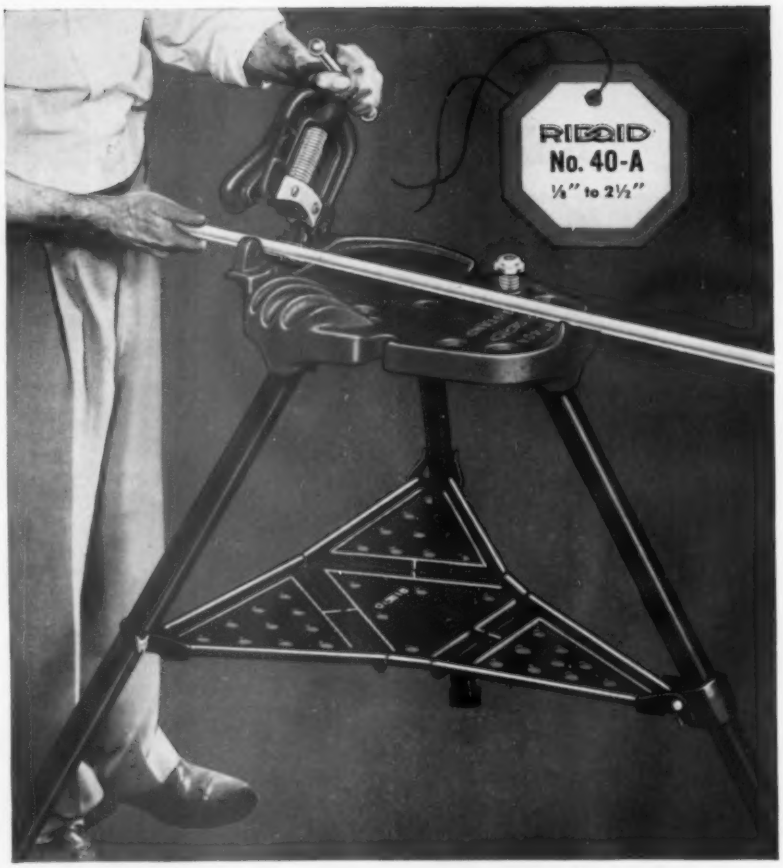
Packaging Institute, 23rd Annual National Packaging Forum, Biltmore Hotel, New York—Oct. 18-22

PIMA, Miami Valley Div., annual meeting, French Lick Sheraton, French Lick, Ind.—Oct. 19-21

National Paper Trade Assn. fall convention, Conrad Hilton Hotel, Chicago—Oct. 22-25

. . . November

TAPPI, Annual Alkaline Pulping Conference, Rice Hotel, Houston, Texas—Nov. 1-3



Work Gets Done Faster with a

RIDGID®

TRISTAND VISE

on the job!

EASY TO FOLD
EASY TO CARRY
Extra Rigid in Use

Here's a solid workbench to speed all cutting, threading and reaming out on the job. No other vise offers as many work-saving features as this RIDGID No. 40-A Tristand Yoke Vise. • Big, rugged malleable vise base has 3 bending grooves, 6 tool slots, rear pipe rest and a ceiling brace screw for absolute rigidity if legs aren't bolted down. • Base overhangs front legs for clear tool swing. • Extra-large yoke latch opens for easy, fast insertion of long pipe lengths. • Replaceable LonGrip jaws give, slip-proof grip. • Handy tool tray locks legs open during use but folds for easy carrying with legs snap-chained together. RIDGID No. 450 Tristand Chain Vise with ⅛" to 5" capacity is also available.

Call your Distributor today. For your convenience, he maintains a complete stock of RIDGID Work-Saver Pipe Tools and parts.

RIDGID

The Ridge Tool Company, Elyria, Ohio, U.S.A.

PRODUCTS and SERVICE...

KEOGEL Pregelatinized—ready to use—beater starch.

KEOTAC Cationic—effective—economical wet end additive.

KEOZYMES Enzyme converting starches for sizing and coating adhesives.

KEOCLORS Oxidized starches—complete line for sizing and coating adhesive application.

KEOGUM A new line of corn starch derivatives for sizing and coating adhesive application.

KEOFILMS Economical—controlled viscosity thinboiling starches for special sizing applications.

to meet your changing needs

Mistakes are costly. That's why you'll want to rely on Hubinger products and field service. For over three-quarters of a century, we've been developing, testing, and manufacturing starches and adhesives—always looking for new and better products. And, these products are serviced by trained field personnel, men who can help you solve the most complicated starch and adhesive problems. If your mill needs new starch products to meet special specifications, let our nearby Hubinger paper-starch technical service representative help you. You can depend on him—and Hubinger products—to meet your changing needs and do so economically.
Just phone or write us.

THE HUBINGER COMPANY / *Keokuk, Iowa*

New York • Chicago • Los Angeles • Boston • Charlotte • Philadelphia

FINISHED PRODUCT PROCESSING EQUIPMENT Winders • Reclaim Winders • Cutters • Sheeters • Slitters • Supercalenders • Roll Wrappers • Roll Lowering Tables • Roll and Shaft Handling Equipment • Conveyors • Unwind Stands and Tru-Tension Controls • and other equipment for the paper and allied industries.

before you decide on a new **unwind stand**

meet some "Beloit Eastern" people

OSCILLATING UNWIND STAND on the erecting floor is checked out by chief inspector Earl Reese, head of quality control, and field erector Jack LeFevre. Precision requirements and highest performance standards are rigorously maintained.

PHOTO: S. N. CHRISTENSEN

REESE brings 20 years' experience to quality control.

LEFEVRE, veteran of 37 years, is widely known.

BELOIT EASTERN PAPER MACHINERY DOWNINGTOWN, PENN.

Member Beloit Group

BELOIT EASTERN

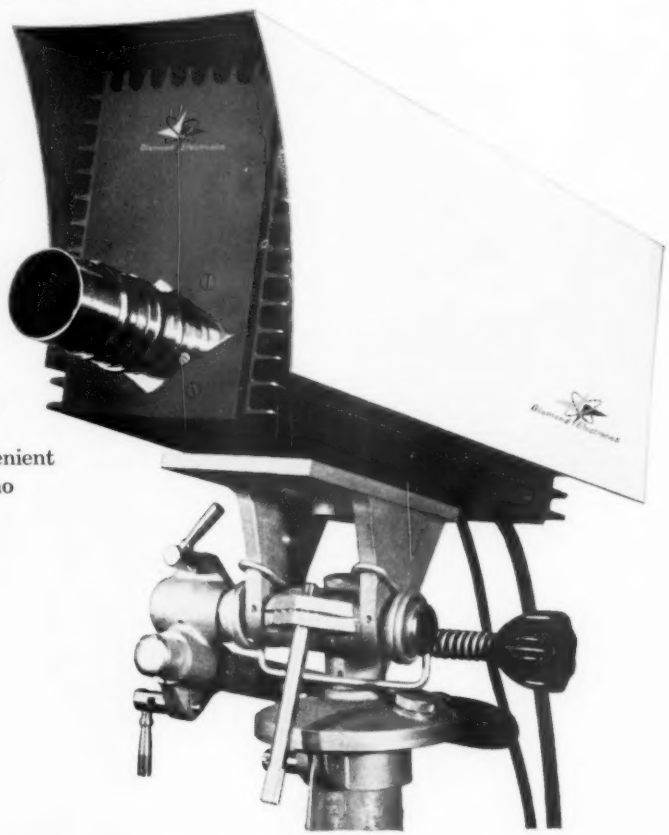
CORPORATION

Downingtown, Pennsylvania

New Hawk 401 Utiliscope permits...AN UNPRECEDENTED PROPOSITION IN CLOSED CIRCUIT TELEVISION...

Impressed by the potential value of closed circuit television but *depressed* by reports of high initial cost, expensive maintenance, constant requirement for difficult adjustments, and general unreliability? Then listen . . . to an unprecedented proposition from the world's oldest manufacturer of industrial closed circuit television: Indoor or outdoors, in any kind of weather with practically any degree of illumination, Diamond Electronics' all new Hawk 401 Utiliscope is *guaranteed on a money-back basis* to provide a sharp, clear picture of just about anything . . . perimeter barriers, gates, transfer points, loading docks, construction areas, vehicular movement, rooftops, hazardous areas . . . all from one safe, comfortable and convenient location. The Hawk requires no special housing, no special power supply, no special adjustments for changing light and weather conditions. Just plug it into an ordinary 110 V outlet and forget about it.

See for yourself. Call, write or wire and we'll arrange a demonstration within the week.



Diamond Electronics

Diamond Power Specialty Corporation • Lancaster, Ohio

PHOTOGRAPHY BY JOHN BICKEL

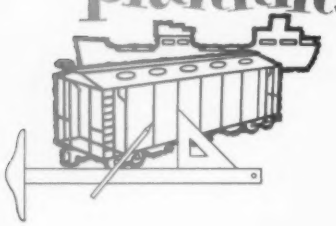
The mark of quality on wood pulp for every purpose.

Weyerhaeuser Company

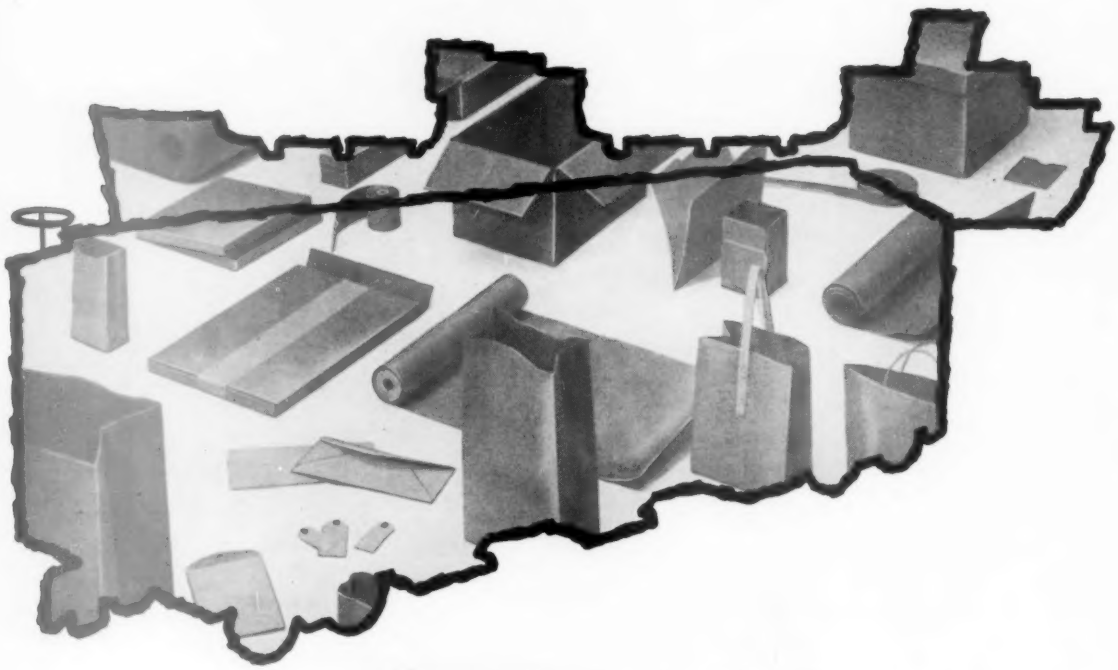
Pulp and Paperboard Division

WEST END

advance planning



OF ECONOMICAL SALT CAKE TRANSPORT ANTICIPATES INDUSTRY'S GROWING NEEDS



WEST END program of utilizing economical water transport and new Jumbo hopper cars with 60% additional capacity enables West End to move salt cake at great distances economically. With a vast natural raw material supply and large, expanding production capacity, West End is solidly qualified as a major supplier to handle the complete requirements of its customers dependably, economically and efficiently within a wide geographical area.

Stauffer CHEMICALS

WEST END CHEMICAL COMPANY • DIVISION OF STAUFFER CHEMICAL COMPANY

636 CALIFORNIA STREET, SAN FRANCISCO, CALIFORNIA • PLANT: WESTEND, CALIFORNIA

St. Regis Paper Co., Tacoma, Wash., installs rotary lime kiln...

new 275-ft "oven" bakes a batch of savings

This giant kiln is almost as long as a football field. It gulps in huge quantities of waste lime sludge and converts it into usable lime of uniform high quality. Because of a unique feeding system, it can process sludge and raw limestone (if needed) simultaneously.

Other Allis-Chalmers products at the mill include twelve *ACAP* pumps. These centrifugals adjust instantaneously to meet changing consistencies or pressure and volume requirements. Additional Allis-Chalmers contributions: several *Super-Seal* motors. They're *open* motors, but they shrug off floods, dust, contaminants — and they have a 1.15 service factor.

An Allis-Chalmers subsidiary, Valley Iron Works Corporation, furnished a secondary headbox for the new paper machine at St. Regis. Valley headboxes offer "on-the-fly" adjustability, speed production, and eliminate costly machine shutdowns.

Allis-Chalmers equipment, processes and services are cutting costs and improving efficiency in every phase of the paper industry . . . from forest to finished product. Allis-Chalmers, Industrial Equipment Division, Milwaukee 1, Wisconsin.

ACAP and Super-Seal are Allis-Chalmers trademarks.

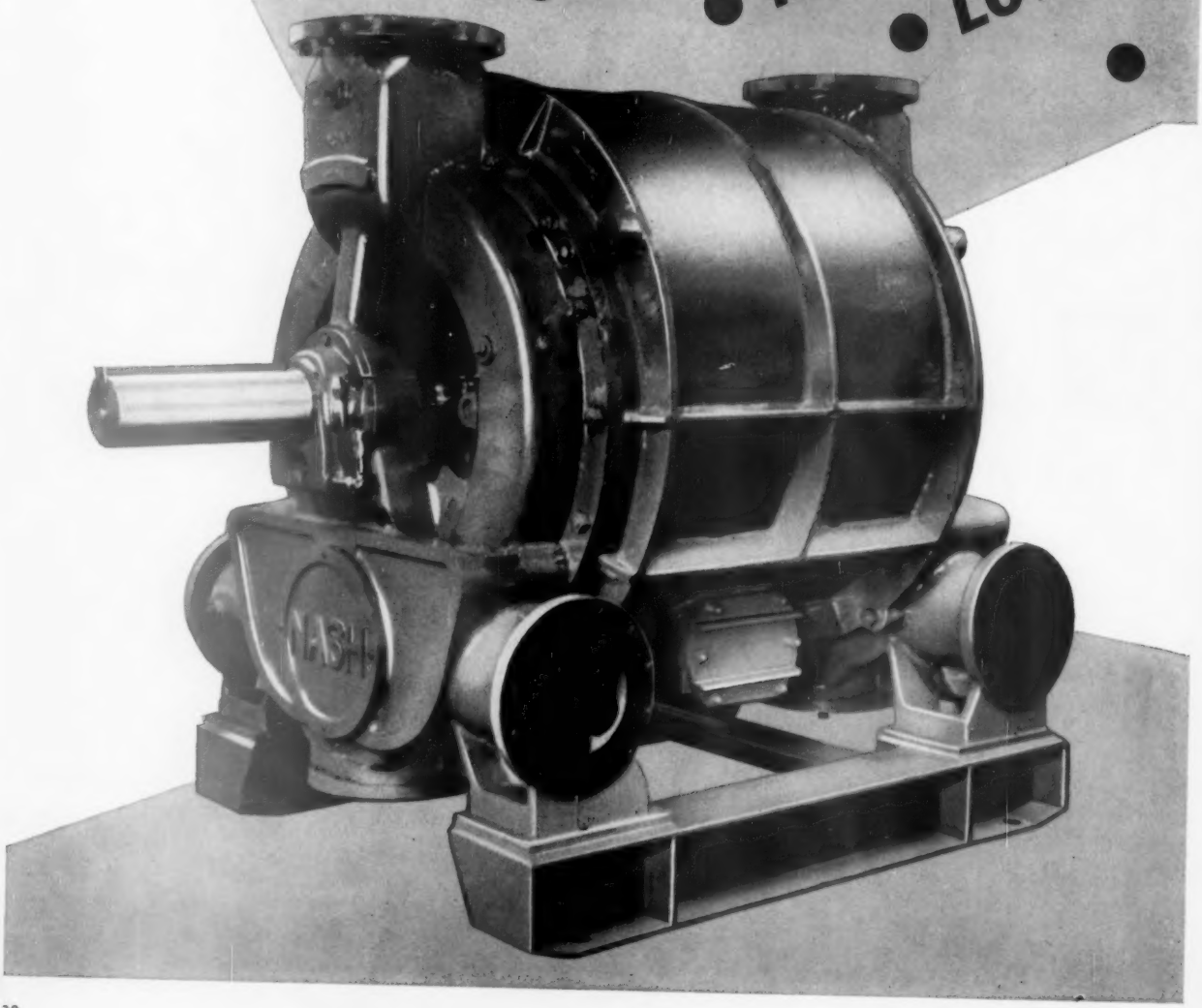
ALLIS-CHALMERS

A-1538

a new NASH

designed for

- HIGH PERFORMANCE
- RELIABILITY
- LOWER



VACUUM PUMP

INVESTMENT
REDUCED OPERATING COSTS

- Vacuums to 25″ of Mercury with sustained volume and lower horse power. Available in capacities to 9000 cubic feet.

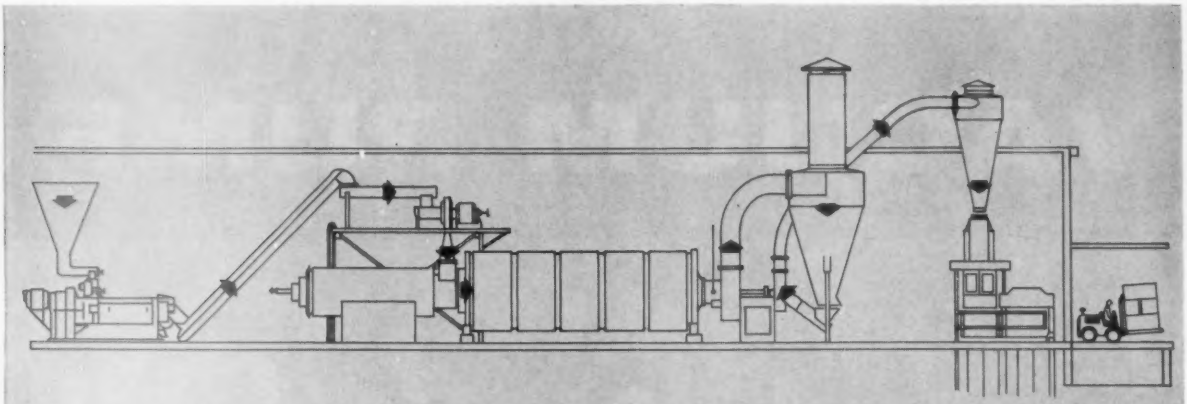
Can be supplied with integral reduction gear for direct connection to high speed motors.

Material reduction in floor space required.

Send now for details of the new 6000 series Nash Vacuum Pumps.

NASH ENGINEERING COMPANY

SOUTH NORWALK, CONNECTICUT, U.S.A.



NEW PULP-DRYING SYSTEM SOON PAYS FOR ITSELF

The schematic drawing above shows the HEIL DRYER in a typical pulp-drying system.

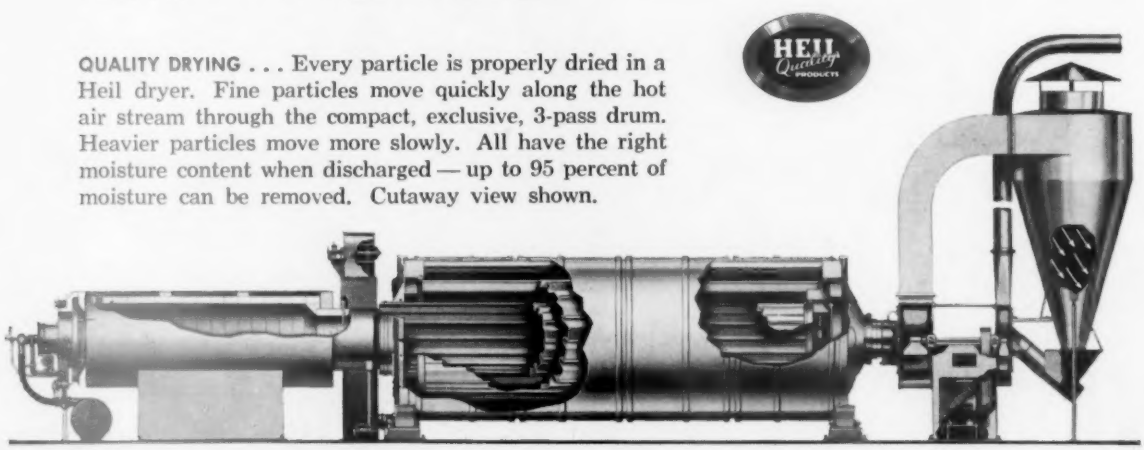
It is a modern method of preparing pulp for shipment or storage and may be used on all types of pulp. It is especially desirable for ground wood pulp because microbiological deterioration is arrested in the drying process.

Installations of this type usually pay for themselves in one or two years. In addition to the major savings in freight — shipping dried instead of waterlogged pulp — there are many other savings in time and handling.

We'd like to give you the full story on how you can save money and get high-quality dried pulp with a HEIL DRYER — the dryer that soon pays for itself.

Write for complete details. Users' names on request.

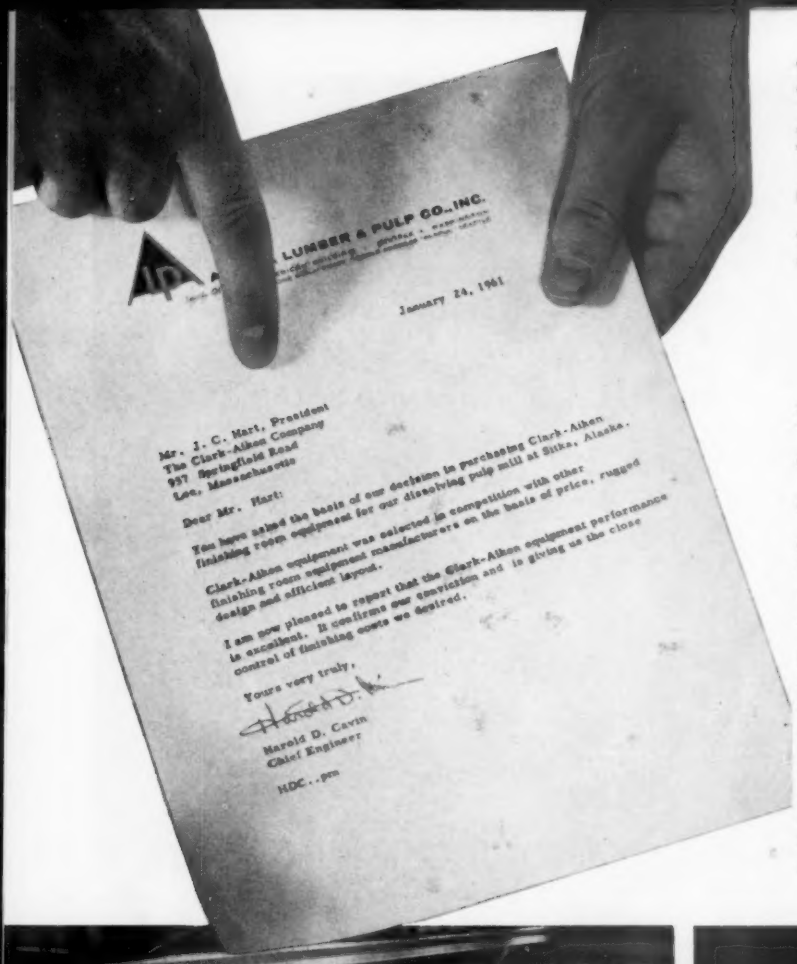
QUALITY DRYING . . . Every particle is properly dried in a Heil dryer. Fine particles move quickly along the hot air stream through the compact, exclusive, 3-pass drum. Heavier particles move more slowly. All have the right moisture content when discharged — up to 95 percent of moisture can be removed. Cutaway view shown.



THE HEIL CO.

MANUFACTURERS OF THE ARNOLD DRYER

3000 WEST MONTANA STREET • MILWAUKEE 1, WISCONSIN


LUMBER & PULP CO., INC.
January 24, 1961
Mr. J. C. Hart, President
The Clark-Aiken Company
957 Springfield Road
Lee, Massachusetts
Dear Mr. Hart:
You have asked the basis of our decision in purchasing Clark-Aiken finishing room equipment for our dissolving pulp mill at Sitka, Alaska.
Clark-Aiken equipment was selected in competition with other finishing room equipment manufacturers on the basis of price, rugged design and efficient layout.
I am now pleased to report that the Clark-Aiken equipment performance is excellent. It confirms our conviction and is giving us the close control of finishing costs we desired.
Yours very truly,
Harold D. Cavin
Chief Engineer
HDC..pm

HERE'S..."Control of finishing costs we desire" at the Alaska Lumber & Pulp Co. Inc.

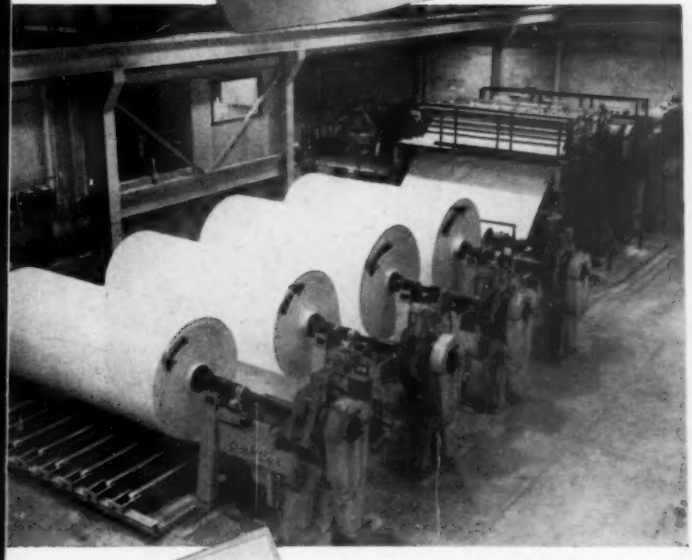
Clark-Aiken

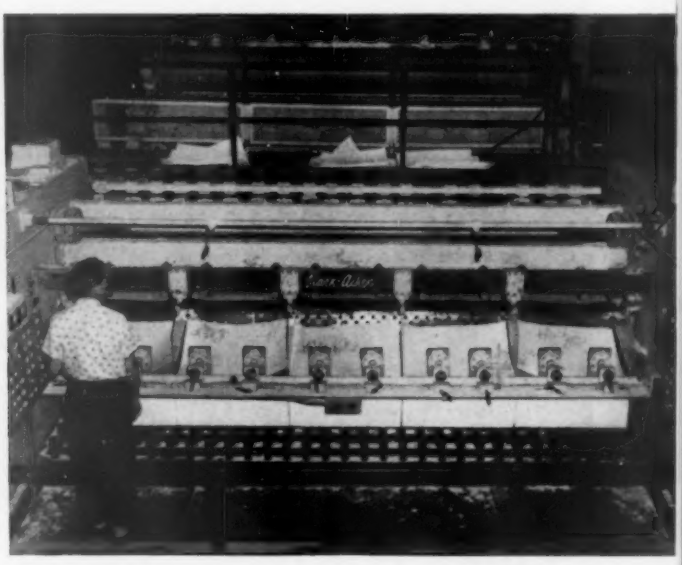
PULP MILL EQUIPMENT can knock out high finishing costs for you too!

Controlled costs, improved production, reserve speed, uniform sheet lengths, easy maintenance, and many equipment innovations give recognition to the Sitka installation of Clark-Aiken pulp mill machinery as outstanding.

Satisfaction, as expressed in Mr. Cavin's letter, speaks the successful meeting of mill management desires and requirements — the engineering coordination and cooperation to achieve uncommon results.

Clark-Aiken machinery is well known for its day-in and day-out reliable performance and unusual sturdiness . . . so, if you're looking for cost cutting opportunities, why not talk to Clark-Aiken now — explore the possibilities of equipment innovations for savings in your plant.





CUTTER LAYBOY FEED
Four 15-ton Jumbo rolls per charge for back-to-back cutting.

UNIFORM SHEET LENGTHS
Layboy tapes have speed of 200 to 800 FPM speed range. Variable speed drive. Heavy-duty construction.

Send for complete reprint story "How Sitka Finishes Dissolving Pulp."
The step-by-step progress of pulp from rolls to finished bales at Alaska Lumber and Pulp Co., showing Clark-Aiken equipment as used. Send for your copy today.

THE Clark-Aiken COMPANY
957 SPRINGFIELD ROAD
LEE, MASSACHUSETTS

CANADIAN REPRESENTATIVE: GORDON W. KEATES,
133 FLORA DRIVE, SCARBOROUGH, ONTARIO

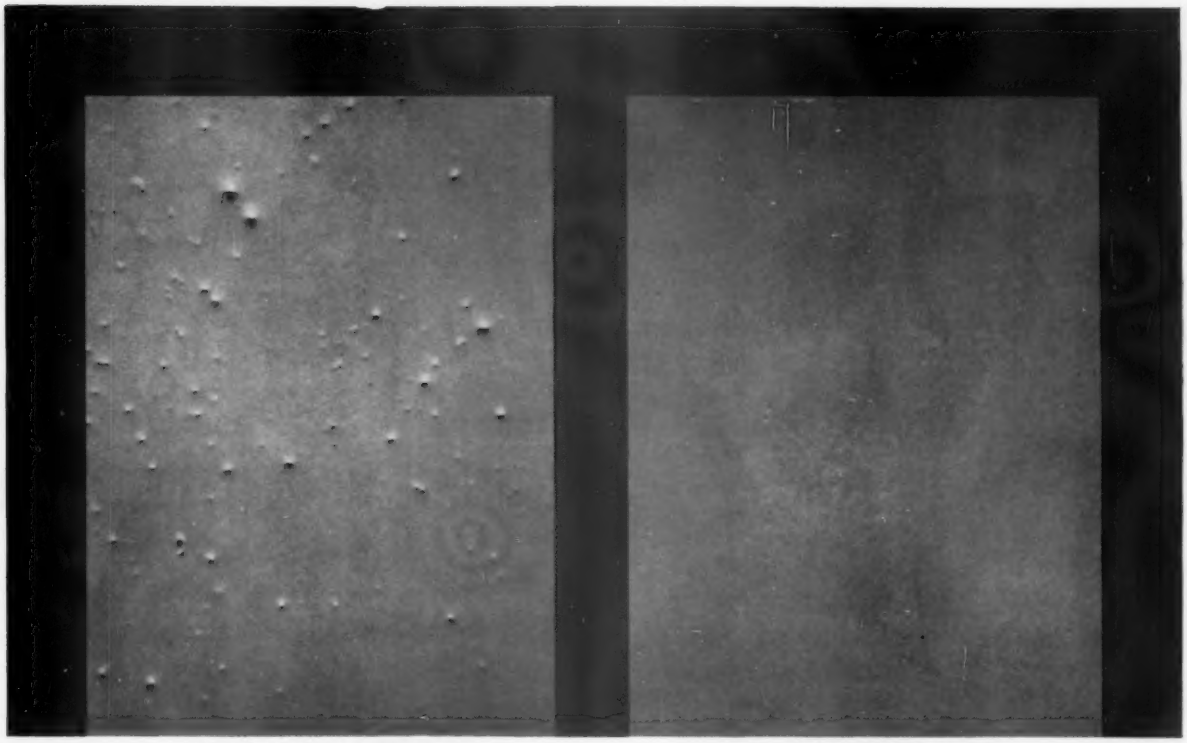
Crown Zellerbach adds nine more SWECO Separators

Six years ago Crown Zellerbach started their coated paper operation in West Linn, Oregon, with six 48" SWECO Separators. Recently nine more were added. ⌘ The rigid quality control required in making paper coatings demands that all contaminants and foreign objects be screened out. Crown Zellerbach, using SWECO Separators with screens from 50 to 200 mesh, produces up to 30 gpm per unit of uniform quality coating—enough to coat 2,100 miles of paper every day. ⌘ Simplicity of screen cleaning and changing is an important advantage of SWECO Separators in paper mill applications, providing versatile and reliable, round-the-clock operation. ⌘ For full details, application data, or free screening demonstration in your plant with your materials, write SOUTHWESTERN ENGINEERING CO., 4800 Santa Fe Avenue, Los Angeles 58, California, Dept. 4919.

SWECO

*Vibro-Energy*separators, grinding mills, finishing mills*

*TM SEC



Film of 60% solids dispersion
General Purpose Titanium Dioxide
13X magnification

Film of 60% solids dispersion
TITANOX-A-CG
13X magnification

The right "specs." mean NO SPECKS in paper coatings

Your specifications ("specs.") for coatings can well include TITANOX-A-CG, the Coating Grade anatase titanium dioxide pigment.

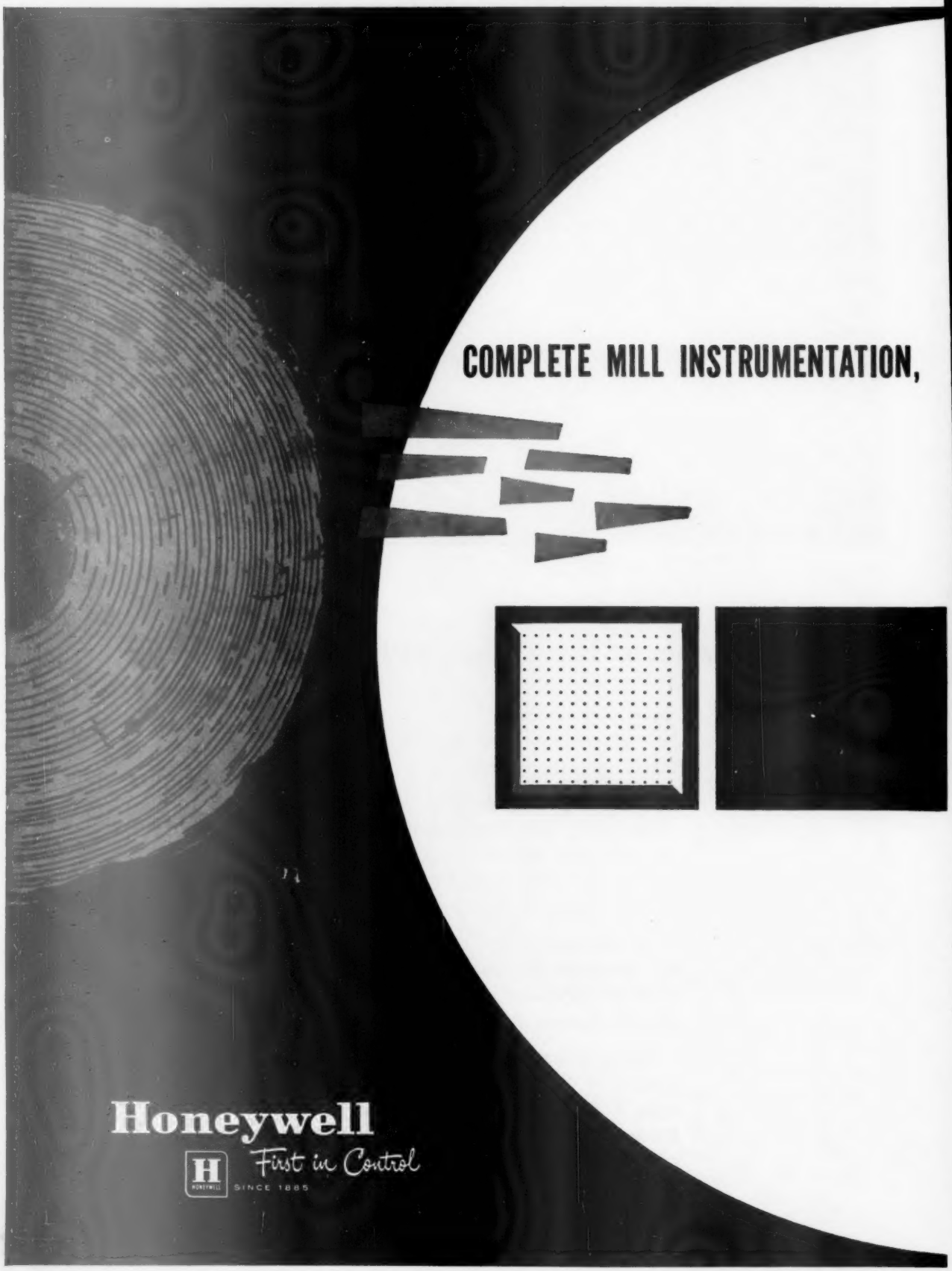
Made expressly for paper coatings, this pigment is controlled by rigid specifications that maintain not only whitening, brightening and opacifying power, but also the ease of fine dispersion and the freedom from coarse agglomerates that help banish specks.

For your coatings that must be produced and used with the utmost speed and still yield surfaces of uninterrupted smoothness, let TITANOX-A-CG be your choice in titanium dioxide.

Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; offices and warehouses in principal cities. In Canada: Canadian Titanium Pigments, Ltd., Montreal.

8315

TITANIUM PIGMENT CORPORATION
SUBSIDIARY OF NATIONAL LEAD COMPANY


COMPLETE MILL INSTRUMENTATION,
Honeywell
First in Control
SINCE 1885

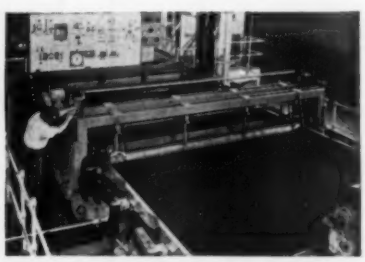
HONEYWELL STYLE

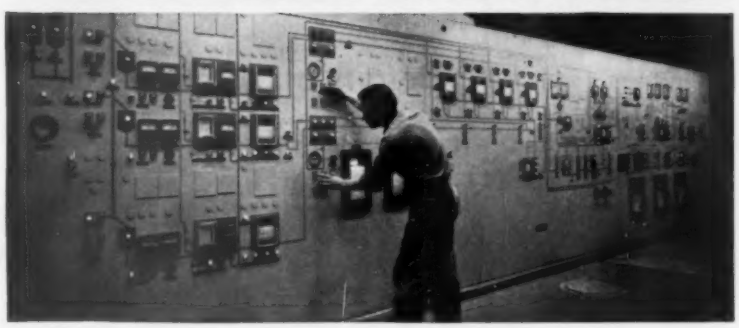
For the world's most automated fiberboard mill, CELOTEX specified complete mill instrumentation, Honeywell style—*pre-piped, pre-wired, installed, and serviced.*

CELOTEX solved *with one Honeywell contract* the 1001 special instrumentation problems involved in getting the company's new L'Anse plant into production: instrumentation analysis of the fiberboard manufacturing process; supplying the complete control system; installing the control instrumentation with complete pneumatic piping and wiring; testing and calibrating the system; training CELOTEX personnel to operate and service the system; and providing complete guaranteed servicing for one year after completion of installation. *All in one complete package!*

Honeywell's *Pneumatic and ElectriK Tel-O-Set* recorders, transmitters, controllers, and other miniature instruments bring significant savings to this application. They not only save money and panel space but also permit consolidation of instruments into a more compact, easier-to-read graphic panel. All the instruments used in the pulping operation, for example, are grouped on a single panel rather than two or three which would be required if full size instruments were installed. By using both pneumatic and electric instruments in the control system, CELOTEX is able to utilize the inherent advantages of both types.

Find out more about *Complete Mill Instrumentation, Honeywell Style!* Get in touch with your local Honeywell field engineer. Be sure to ask him about the cost- and space-saving advantages of *Pneumatic and ElectriK Tel-O-Set* instruments. MINNEAPOLIS-HONEYWELL, Wayne and Windrim Avenues, Philadelphia 44, Pa. — In Canada, Honeywell Controls, Ltd., Toronto 17, Ontario.





■ At the new L'Anse plant in Upper Michigan, The CELOTEX Corporation produces a variety of acoustical and decorative fiberboard ceiling tile, insulating sheathing, insulating roof deck, and roof insulation. The plant is designed to turn out more than a half-million square feet of half-inch fiberboard daily.

■ The L'Anse fourdrinier machine shown here is the widest wet-process structural board forming machine in the world. The graphic panel in the background controls the entire board machine operation.

■ This graphic panel and other instrumentation, made, installed, and serviced by Honeywell for the L'Anse plant, help make this operation "the only one of its kind in which a fiberboard product travels all the way from manufacturing and fabrication . . . to inspection and packaging on a continuous production line."

SYSTEM DESIGN: Giffels & Rossetti, Inc. Engineers • Architects, Detroit, Mich.

HONEYWELL INTERNATIONAL Sales and Service offices in principal cities of the world. Manufacturing in United States, United Kingdom, Canada, Netherlands, Germany, France, Japan.

make a
better paper
with

R·T·VANDERBILT COMPANY, INC·N·Y·
AMERICAN PRODUCTS

Bilt-Wax®

IMPROVED WAX EMULSIONS

FOR

hard board

magazine—liner

carton stock—insulation board

details on request

R. T. VANDERBILT
COMPANY, INC.
230 Park Avenue, New York 17, N. Y.

Anthony Desiderio, president of Whippany Paper Board Co. (above), heads the team of fifteen Desiderios who run the $50-million New Jersey firm. They comprise seven brothers and their eight sons. Nepotism? Some may call it that. But last year, a slump time for the paper industry, the Desiderios pushed profits to $1.9 million—highest in company history. "Mr. A. D.," as he's called, tells how . . .

Family Management Pays Off

By PETER INSERRA, Assistant Editor

FAMILY ESPRIT DE CORPS, coupled with close management supervision and competitive selling, results in greater over-all efficiency, and is the key to Whippany's profit picture, according to President A. D. Desiderio.

"We're all working for one unit—the Whippany Paper Board Co.! Each member of the family has his own responsibilities in which he is interested, and which he does well. I can rest assured that my nephew in purchasing is doing the job as well as I could—because he'll know it if he isn't up to par. We issue orders and follow them through. It's even more embarrassing when a relative has to reprimand," the top executive says. "The 'outside' employe works eight hours and quits. We don't punch a clock; we just get the job done in the time it takes."

But Whippany's success is due to more than integrated management, a policy which even companies whose profits declined last year have used successfully. The additional element in this success story is the personal verve of "Mr. A.D." himself. (With 15 Desiderios in the business, initials simplify communication.)

In 1957, for instance, Mr. Desiderio went to buy a huge paper machine for the Eden plant that the company subsequently built at Whippany, N. J. He came away buying two—and after only a few minutes of discussion. Two machines? Competition, somewhat uneasy about the increased production potential, didn't think Whippany could find a market, according to Mr. Desiderio. Nonetheless, its attitude toward the giant step was one of grudging respect. But Whippany did sell its paper, and the industry had to recognize new vigor in an already aggressive competitor in the sales race. And now, the 245-in. Fourdrinier, converted from the original 234-in. cylinder machine at a cost of $2.5 million, is pushing production capacity at Whippany's five mills to about 2,000 tons a day.

"Then (in 1957) and now we made moves only after thinking everything out. People only thought we bit off more than we could chew. I didn't eat all that paper we sold," Mr. Desiderio joked. Then speaking deliberately, he added, "You have to be calm, very calm. I'm smart enough to know I can be wrong. I have an open mind. You can't go wrong with that philosophy."

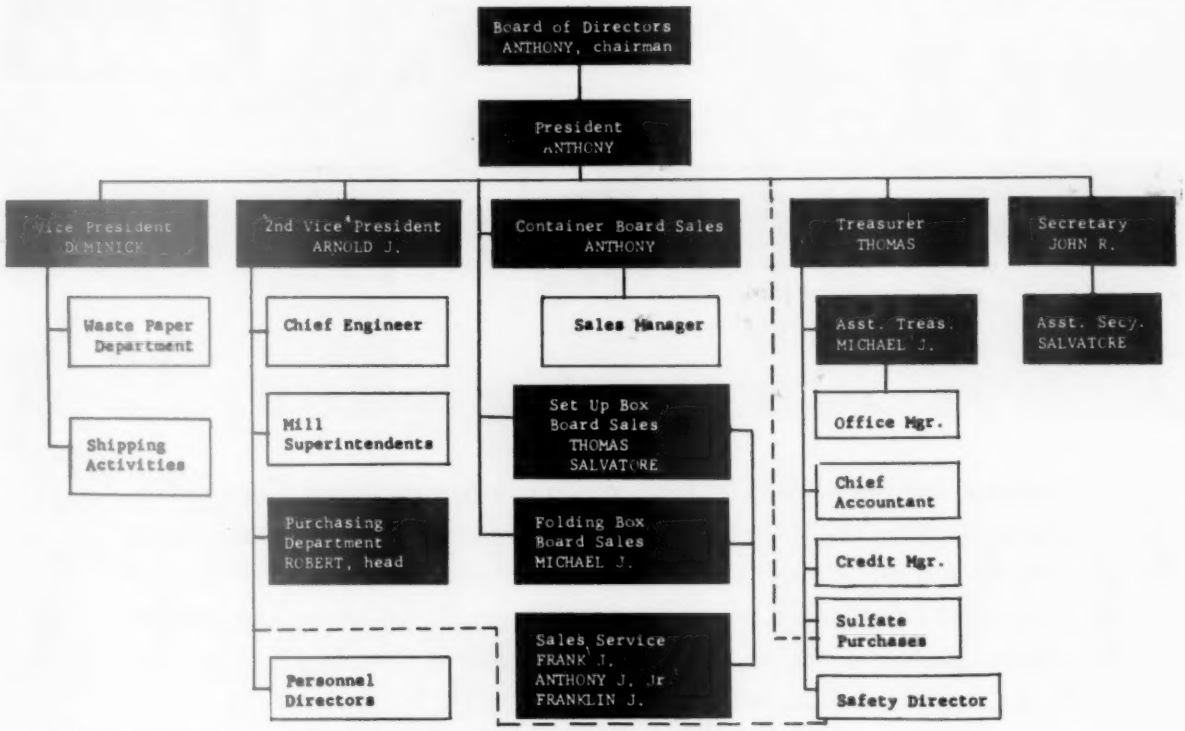
Concomitant with Mr. Desiderio's open mind are self-assuredness and determination.

"When we were seeking outside financing for the Eden improvement, I had to have confidence in the operation—and in myself. I had no company prospectus, and only one selling point—estimated production. I'm a conservative businessman, and those estimates were conservative."

Except for a lull in 1958, when the new Eden machines were just starting up, consolidated earnings and production of Whippany's principal products, container board, folding boxboard and set-up boxboard have risen each year. (See accompanying chart.)

The Fourdrinier conversion was financed by public funds from the sale of stock last March. The issue, 250,000

. . . Family Management



THE FIFTEEN DESIDERIOS who manage the operations of Whippany Paper Board Co.

common shares, at $15 a share, was oversubscribed even before it was introduced. Sales of $48,680,400 in the year ended Sept. 30, 1960, produced $1.9 million in net earnings, or a 9.9% return. That represents a 26% rise over September 1959, when net gains were $1.5 million.

Decision-making still is in the hands of the family, which retains 66 per cent of the company. Partial public ownership, which has made stock available for exchange, has put Whippany in the merger spotlight. Although the company has received several offers of merger, Mr. Desiderio said merger now would be imprudent, since Whippany is a principal supplier to independent box makers who hold 57% of the New York metropolitan market. If the percentage of independents decreases, and Whippany's market narrows, a merger could come.

Whippany takes out of N.Y.C. —or as Mr. Desiderio puts it "from the forests on Madison Avenue where every secretary is a lumberjack"—more wastepaper, and brings back more converted board, than any other independent in the metropolitan area. Container board represents 50% of the company's sales. About 90% of the jute liner and bogus corrugating used by independent box plants in New York City's environs comes from Whippany.

There had been speculation that specialized paper industry management would join the board of directors now that the company is public. However, Mr. Desiderio said, the business experience of the seven Desiderios and four outside directors, the latter, businessmen added when the company became a public corporation, is sufficient "right down the line."

The eight sons are junior executives in the corporation. Each has taken business training in college, and each has worked in the mills. Mr. Desiderio considers it essential that the practical and the academic be balanced.

"These boys have brought technical experience to college and college to the job," he asserted. They grew up in the mills and worked here summers between college years. They work here, not because they have to, but because they want to and can contribute something."

Whippany now operates five mills—Eden, Hanover and Stony Brook, all at Whippany, N. J., one at Durham, Pa. and another at Clifton, N. J. All were acquired over a 30-year-period, and are the burgeoning outgrowth of a small waste-collection business, started in 1904 by Mr. Desiderio's father, Frank, shortly after he emigrated to the U.S. from Italy.

In the beginning, Frank Desiderio and his three sons, Dominick, Thomas and Anthony carted waste in a horse and buggy. By 1932, the business had grown to a fleet of 100 trucks servicing many of the large mills in New Jersey and New York.

In that same year, when many Americans were getting out of business, the family made its auspicious entrance into papermaking. A mill at Clifton, N.J. was purchased by the family, which was the mill's prime

Whippany's 10 Machines

Plant	*Trim*	*Daily capacity (tons)*
Eden	100 in.	
	132 "	
	230 "	
	250 "	1,350
Clifton	114 in.	
	134 "	300
Stony Brook	64 in.	
	81 "	150
Hanover	112 in.	150
Durham	158 in.	150

creditor. The Desiderios began turning out 60 tons daily as a sideline to their waste-collection business.

The family kept growing and so did markets for paper. The waste business was discarded.

In 1933, the Hanover mill was acquired from the United Paperboard Co. Two years later, the Durham mill was purchased from Sanitary Paper Products Co. A new paper board machine, the first in the North in more than a decade, was installed at Clifton in 1938.

Major expansion, however, came in 1947 when the Desiderios bought the Eden and Stony Brook mills from the McEwan Brothers. This was the firm to whom the family sold their first load of direct-to-mill waste paper 30 years earlier.

A small machine at Durham was replaced in 1953, upping capacity there from 35 to 150 tons. Construction of the addition to the Eden mill began in 1957, and, by 1958, the giant "Metropolitan" paperboard machine, one of the largest in the world, and its companion Fourdrinier, the "20th Century," brought Whippany's overall capacity on 10 machines to 1,600 tons daily. At its inception, Whippany employed 50 men; now, 1,100 work for the company.

It is the Eden mill, though, about which the Desiderios speak with most pride.

"Sometimes I come into the mill at night and stand in the aisles between the two machines and wonder if it's all true," Mr. Desiderio contemplated. "It was tough work scrambling around for all kinds of waste material in those early days. Now just look at that machine humming along over there, sonny. (He calls everyone "sonny" or "Frank.") I find it hard to believe that someone like me can now be president of a big mill like this."

How Whippany Has Fared Since 1955

	Production	Total Production Cost	Sales	Profits
1955	250,495	$16,584,400	$24,740,000	$206,500 (loss)
1956	247,412	18,424,100	28,704,600	1,646,800
1957	253,737	18,109,400	28,389,300	1,072,700
1958	323,235	23,653,200	35,776,400	725,800
1959	372,034	25,749,300	46,654,600	1,501,100
1960	402,633	28,083,200	48,680,400	1,904,900

The two modern machines at the 885-ft. Eden mill represent a $26.5 million investment. The mill's four machines constitute what is virtually a Southern-style operation, 25 miles from the heart of New York City. An almost continuous truck caravan hauls wastepaper from Whippany's 400 suppliers to satisfy the voracious appetites of the 24-hour operation. The original Fourdrinier turns out container board at 1,800 fpm and the converted unit operates at 1,365 fpm. The trucks unload at 29 enclosed stalls at the mill. Outgoing shipments are made by truck, or by railroad car. An enclosed spur for 20 freight cars at the northeast end of the mill affords all-weather operation.

No one supplier has more than 5% of the company's business, and most are within a 100-mile radius of the five mills. In 1960, Whippany spent $10,-250,000 for 428,000 tons of wastepaper. About 15% virgin pulp is used in some of the 650 different formulae of paperboard made by Whippany.

"We try to have trucks pick up wastepaper when they make a delivery," Mr. Desiderio said. "And our many sources give us over-all variety to meet specific needs, and keep us diversified and independent."

Mr. Desiderio often visits the Eden plant at night (after normal working hours)—but not always to gaze at the family's achievement. One night last winter, he came upon a finished roll of paper about to be reprocessed in one of the mill's hydrapulpers. He told the crew to set it aside, and went to a phone. In a few moments, he was back. "Mr. A.D." had made a $200 sale for that roll of paper. ■

HOW TO DO IT

Problem: Faster well point driving time

Problem: Increasing well point driving time by mechanical means.

Solution: Owens-Illinois, Tomahawk, Wis., fills this need with a portable driver that eliminates the hand maul or sledge. The well point is a 4-ft. 1¼-in. rod. The A-frame boom, made of 2-in. single-strength pipe, stands 16 ft. It is constructed in two 8-ft. interlocking sections for transportation ease. The boom is bolted to the supporting base. Two ⅜-in. guying cables steady the unit. A 2½-hp gasoline air-cooled motor drives the V-belt pulley system which, in turn, operates the driving head. The driving hammer is an 8-in. lead-filled pipe with a 1¼-in. center pipe, which fits over the 6-ft. driving guide. The hammer weighs about 60 lbs. and has steel carrying handles. The head is a 12-15-in. section of 1¼-in. galvanized pipe with a 1¼-in. union on both ends.

The operator starts the driver by pulling the rope, which is wrapped once around the lower pulley. The clutching action engages the rope, and the driving hammer is raised. Releasing the clutching action gives slack to the rope, and the hammer slides down on to the driving head.

In hard rock, when the pipe and well point must be withdrawn, a bulldozer with a chain attached to its blade and to the pipe will hoist the pipe out of the ground.

After water is struck, a box of rough lumber about 6-ft. square is constructed around the well point, and is filled with dirt. In winter, the box is covered with tar paper to prevent freezing. The pipe then is capped until camp is set up, at which time a bell-type manual pump is installed.

COOS BAY, OREGON, biggest forest products port on West Coast, shaped up as a fine location for Menasha Wooden Ware Corp. to build a NSSC pulp and board mill after fresh water had been found under its extensive sand dunes.

Bounty of Water Beneath Dunes

By LOUIS H. BLACKERBY, Western Editor

—North Bend, Ore.

A SIGNIFICANT ADVANCE in wood utilization became a reality here recently when production started up at the Menasha Pulp & Paper Division of Menasha Wooden Ware Corp.

Manufacture of nine-point corrugating medium from mill residues and "weed tree" species of hardwood was inaugurated this summer in a newly completed 125-tpd neutral sulfite-semichemical plant.

The new facilities occupy a 60-acre site on Coos Bay, which leads all other West Coast ports in forest commerce. The Bay is an outlet for an extensive timber region in which huge volumes of lumber and plywood are produced. In 1959 (year in which latest figures were available) Coos County's log harvest totaled 657,631,000 bd. ft. and accounted for more than 7.3% of Oregon's log production.

But despite abundant wood supplies, especially as mill residuals, its use for pulp and paper has been curtailed because water hasn't been available economically. Flow rates of coastal streams in this part of the country vary widely according to season and have relatively long tidal stretches.

Prior to Menasha's start-up Scott Paper Co's 90-tpd bleached sulfite pulp mill at Empire, facing on Coos Bay, was the only production facility on the southern Oregon coast. The Scott mill, originally built to operate on pulpwood logs, has used both roundwood and purchased chips in recent years.

Actually, three pulp mills have been erected at Coos Bay, the first one short-lived. The first, built during the World War I, also had water problems. The plan was to use salt water from the bay for making pulp. But financial and technical difficulties (some of which were attributed to war conditions) caused shut-down of the plant.

A spectacular development permits the Menasha mill to successfully use water obtained from an unorthodox source. Its supply is pumped from a portion of the sand-dune area extending along the coast for several miles to the north of the plant-site. The water supply is the result of a revolutionary concept of Pacific Power & Light Co. dating from 1954. Development work by Pacific Power has since proven the adequacy and dependability of this water source. The utility firm estimates that 152 billion gallons of fresh water is contained in the 13,000-acre sand dune area adjacent to the new pulp plant.

Based on 65 in. of rainfall a year, water is added to the dunes at an average of 65 million gallons per day, according to Pacific Power data. As tides ebb, part of the naturally stored surplus spills into the ocean and bay because of massive weight of the water held above sea level. This same pressure holds saline ocean water out of the dunes to a depth of more than 100 ft. below sea level.

Pacific Power's findings indicate that the 13,000 acres of dunes on which the company holds ground-water permit can produce up to 30 million gal. per day. The Menasha operation currently takes less than 1/15 of that potential.

Expansion opportunities for the area's wood-fiber industry have opened up now that the power company has this large additional source of water and is ready to make it available.

Amount of coarse mill residue produced annually in the state's two southwest counties, Coos and Curry, totals approximate 842,000 tons (dry basis). Counting logs of secondary species like alder, as Menasha does, the region's forest resources are capable of supporting significant pulp-paper tonnage.

According to the West Coast Lum-

SAND WELL is one of six drilled by Pacific Power & Light Co. through coastal dunes to tap heretofore locked water for Menasha mill.

for Menasha Mill

bermen's Assn., lumber production in 1959 in Coos was 715,553,000 bd. ft., and in Curry, 257,778,000 bd. ft. Applying a coarse residuals factor of .443 tons per M bd. ft., this equals 431,385 tons. Plywood production, based on 80% of present mill capacity (including veneer mills) for the two counties, was 1,043,600,000 sq. ft. on a ⅜-in. basis. Applying a coarse residue factor of .394 tons per M sq. ft., residue equals 410,942 tons. The differential between log-harvest volume and lumber-plywood production in Coos was accounted for by net import of logs and over-run of manufactured products volume over log-scale volume.

Regarding production the company feels it is now over its start-up problems, according to R. L. Johnson, newly elected president of Menasha Wooden Ware Corp. He says these were "no greater than we anticipated, and we are all well satisfied with the quality of sheet that we are manufacturing. To date we have made only the standard grades of semi-chemical corrugating medium, but within a short time we will be manufacturing the water-proof grades."

The 125-ton mill was designed, engineered and constructed by Rust Engineering on a "turn key" basis. Most of the pulp and paper processing equipment is by Black-Clawson.

An inclined conveyor transports chips past the acid plant to an outside digester. The two-tube Pandia (each tube is 48 in. dia. and 40 ft. long), has an 18-minute cook cycle, discharges to a blow tank setting beside the chip-surge bin. Provision has been made for future addition of two more tubes and installation of a screw feeder between the tubes to inject hardwood chips separate from Douglas fir, which provides cooking differential. The acid plant is equipped with a counter-flow absorption tower, slurry-system, and a 5-tpd stationary sulfur burner.

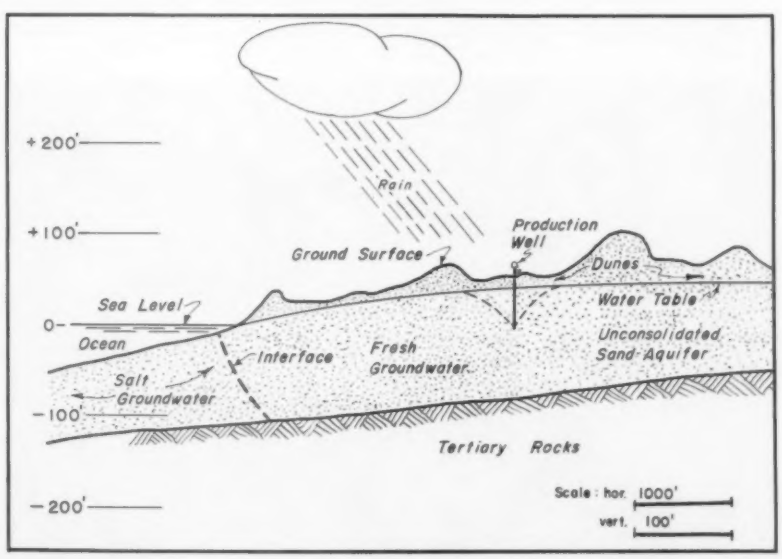
Stock from the blow tank enters the pulp mill building by a screw conveyor for in-series processing by two 500-hp Pressafiners—one on the mezzanine platform, and the other on the main floor. First press ups consistency from 20% to 60% by removing liquor. After diluting with white water to 20% consistency, stock is re-pressed to 60% and diluted from 10% to 12% for primary refining.

Primary refining is by three 48-in. free discharge, high-density 800-hp refiners operating in parallel.

Secondary refining is at 4% consistency with a 2-in. parallel pump-through refiners powered by 700-hp, 450-rpm motors. Disc clearance is hydraulically maintained and automatically controlled from suction couch.

Stock from the fan pump receives final processing by two pressure screens, which remove foreign matter, fiber bundles, and shives en route to the headbox. Fiber recovery from pressure screen rejects and white water is by a disc-type saveall. Filtrate from the saveall goes to a clear well, fiber goes to a broke chest.

The paper machine is a 162-in. trim,



CROSS SECTION OF COOS BAY SAND DUNES from which Pacific Power & Light obtains water supplied to Menasha Pulp & Paper's NSSC mill.

. . . Menasha's Coos Bay mill

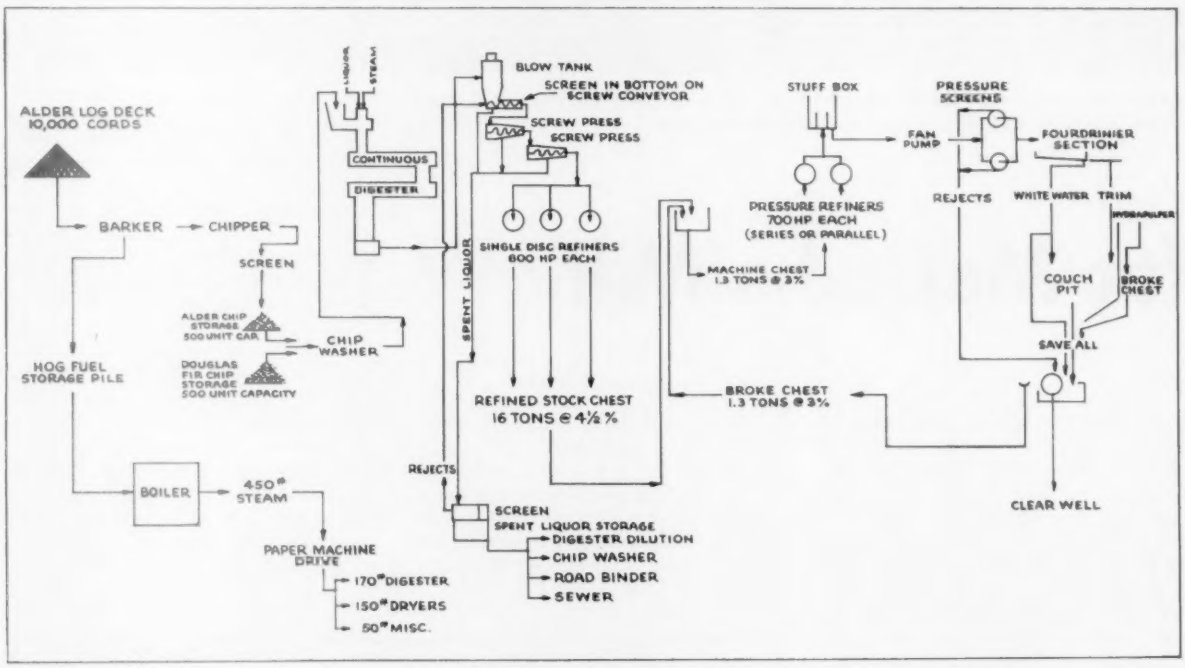
1,200 fpm Black-Clawson with a Hydro-Flow pressurized headbox. The Fourdrinier is permanently cantilevered, with 31 table rolls, four flatboxes, a 36-in. diameter couch and a 24-in. lumpbreaker roll. Two straight-through suction presses deliver web to the two-section dryer containing 30 60-in. diamter paper dryers and six felt dryers.

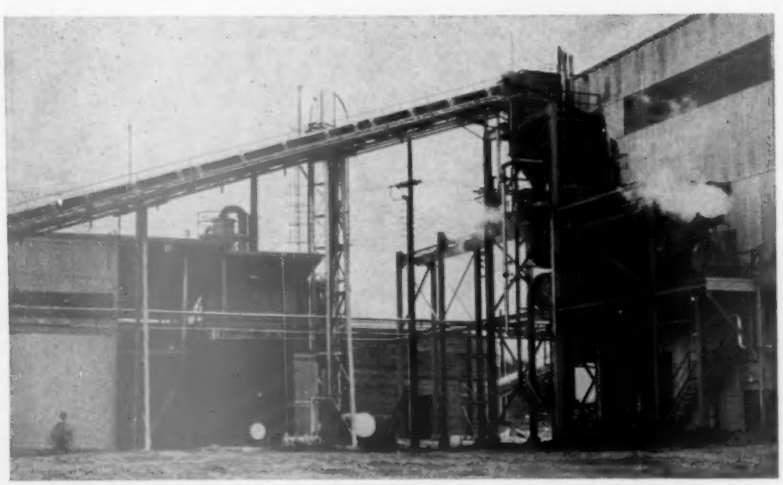
The dry end includes a three-roll corrugating-type calender stack, a reel for jumbo rolls up to 84 in. in diameter, and a machine winder with vertical slitters.

The drive for the second dryer is powered by a belt from the line shaft which is driven by a 750-hp turbine on the basement mezzanine.

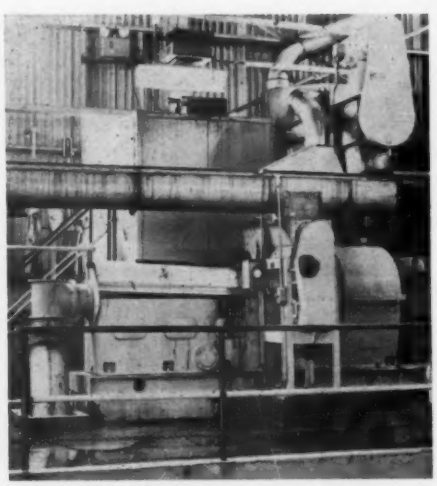
The plant's steam requirements are supplied by a two-drum boiler, which produces 85,000 lbs./hr. at 470 psi and 650F. Hogged waste wood is the prime fuel, but the plant is also equipped to burn oil. Regardless of which fuel is used, the operation is automatic. Steam is distributed at 470 psi to the machine turbine, which exhausts to the mill system at 125 psi. For other requirements, pressure is reduced to 300 psi; for supplying the pulp mill, at 170 psi; the paper machine, at 125 psi. ■

How Pulp and Paper are Made at Menasha

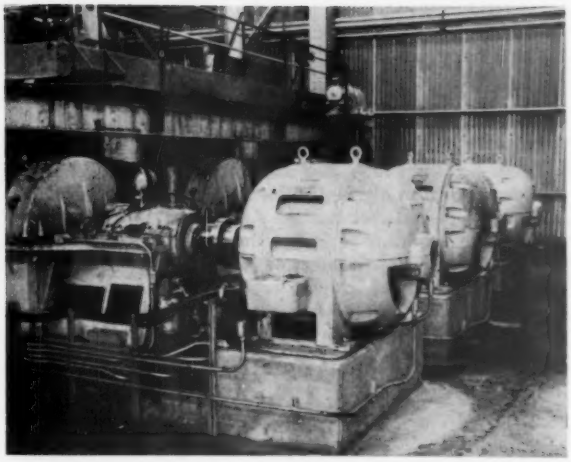




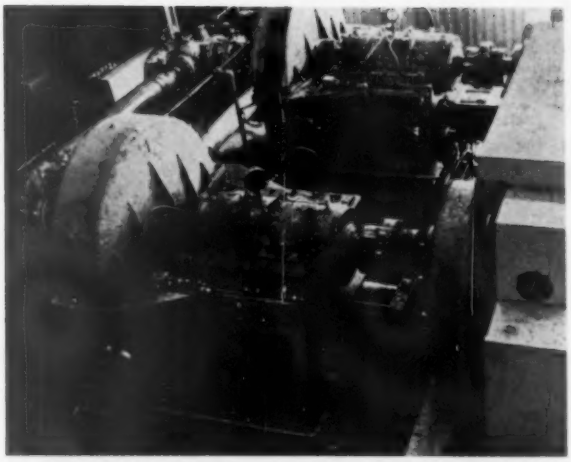
INCLINED CONVEYOR is used to move chips past acid plant to outside digester. The two Pandia tubes are 48 in. in diameter and 40 ft. long.



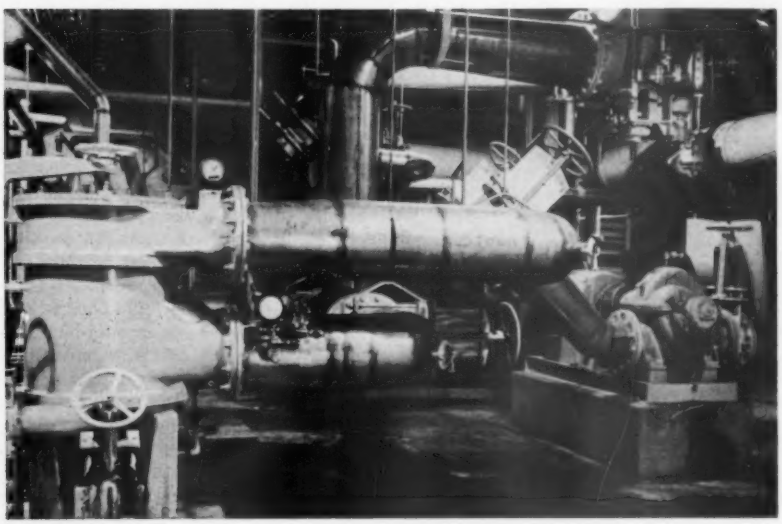
SCREW CONVEYOR carries stock from blow tank into pulp mill building.



PRIMARY REFINERS, of the free-discharge, high-density type, are operated in parallel.

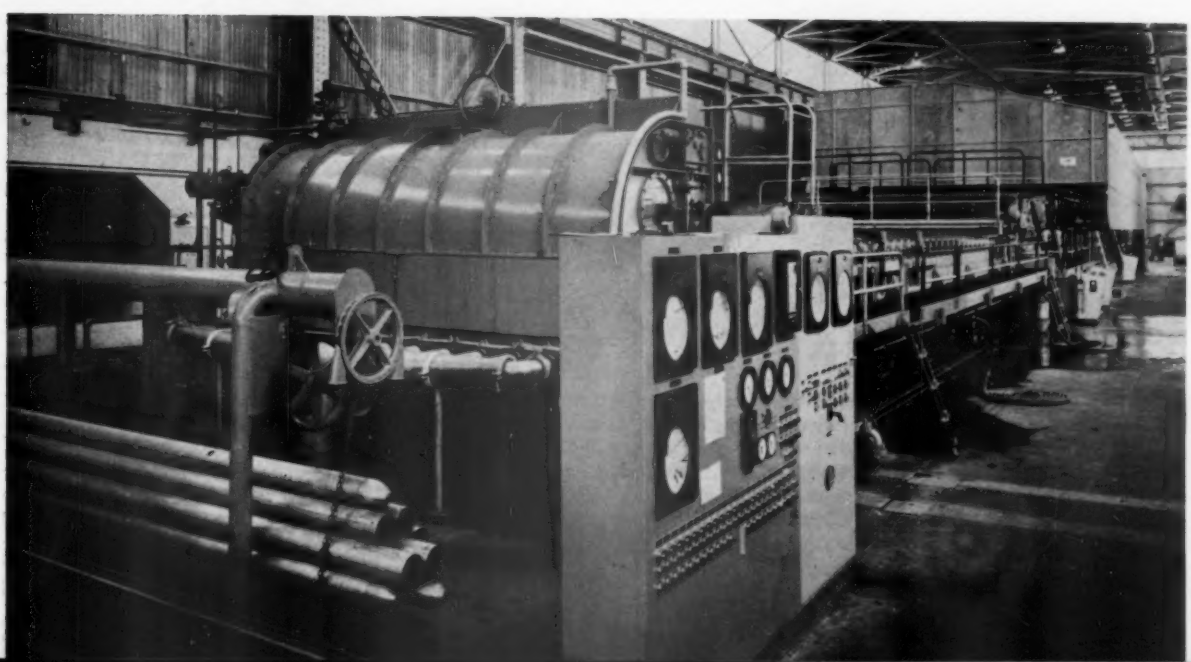


SECONDARY REFINERS are also operated in parallel. The two refiners are powered by 700 hp. motors.

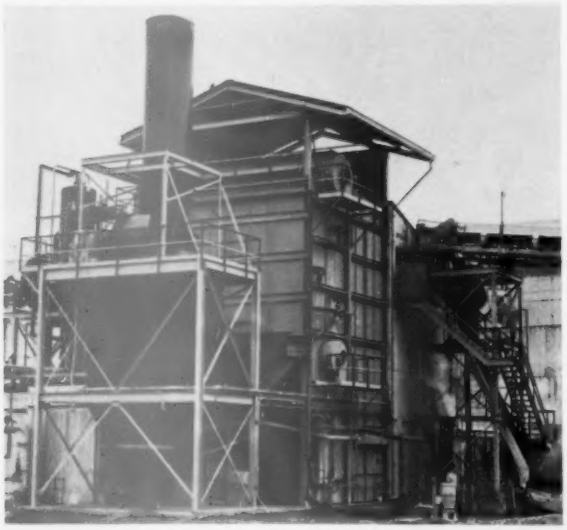


PRESSURE SCREENS receive stock from fan pump (right) and take out foreign matter, fiber bundles, and shives en route to the headbox.

WET END of the 162-in. trim Black—Clawson paper machine, which has a Hydro-Flow pressurized headbox and a permanently cantilevered Fourdrinier with 31 table rolls.



. . . Menasha's Coos Bay mill Power Plant



MENASHA PLANT'S STEAM requirements are provided by 2-drum 85,000 lb/hr 470 psi 650°F. boiler. Hogged waste wood is prime fuel but the power plant is also equipped to burn oil. Regardless of fuel used, operation is automatic. Steam distribution: At 470 psi to machine turbine which exhausts to mill system at 125 psi; for other requirements pressure reduced to 300 psi for supplying pulp mill at 170 psi, paper machine at 125 psi, heating-ventilating and make-up systems at 50 psi. Plant consumes 150 units of fresh, green hog fuel daily; gets 10,000 lbs. steam per unit.

Key people at Menasha's new mill

Hartley Nieuwejaar Kindl Andrews

Dave Hartley, electrical engr., Rolf Nieuwejaar, utilities supt., R. J. Kindl, project engr., Rust Engineering Co., Birmingham, Ala.; at right, Myron Andrews, technical director. Don Spencer (no photo) is administration supt.

Leckband Lindsay DeMuth Manders

Ernest C. Manders, gen. mgr., was with Kimberly-Clark Corp. as technical supt. several years, as KC's production supt. in Mexico, as development engr. at Neenah, Wis. Joe DeMuth, production supt., was supervisor at Green Bay Paper & Pulp Co., Green Bay, Wis.; Clarence Lindsay, plant engr., was formerly design engr. for Coosa River Newsprint Co., Coosa Pines, Ala. Ed. Leckband, maintenance supervisor, was with Crown Z mills in various capacities, most recently at Crown's Lebanon, Ore. plant.

Equipment list

Design engineering and construction, Rust Engineering Co.; *Digester, screens, refiners, paper machine, broke pulper,* Black-Clawson Co.; *Pressafiners,* Bauer Brothers Co.; *Disc saveall,* Eimco Corp.; *Motors, electrical control centers, winder drive, turbine,* General Electric Co.; *Tile chests and liquor plant refractories,* Stebbins Engineering Co.; *Main instrumentation and pneumatic controls,* Minneapolis-Honeywell; *Spent liquor screen,* Southwestern Engineering Co.; *Pumps, soda ash unloading steam ejector,* Ingersoll-Rand Co.; *Gear reducers,* Western Gear Corp.; *Pulp mill screw conveyors,* Continental Conveyor & Equipment Co.; *Paper machine hood and air systems,* Drew Engineering Co.; *Steam control valves,* Fisher Governor Co.; *Stainless steel pipe and fabrication,* Northwest Copper Works Inc.; *Strapping (logs and rolls),* Signode Steel Strapping Co.; *Valves (stock and white water),* W. C. Rovang & Assoc.; *other valves,* Consolidated Supply Co.; *Instrument air compressor,* Fuller Co.; *Mill air compressor,* Allis-Chalmers Mfg. Co.; *Dryer drainage,* Cochrane Corp.; *Liquor preparation design and equipment,* A. H. Lundberg & Assoc.; *Design of soda ash unloading and storage,* Diamond Alkali Div.; *Chip and hog fuel transport systems,* Rader Pneumatics; *Belt and chain conveyors,* Link-Belt Co.; *Ring barker,* Nicholson Mfg. Co.; *Chipper,* D. J. Murray Co.; *Truck scale, roll scale,* Fairbanks, Morse & Co.; *Air-O-Flex chip dumper,* Mill Process Engineers; *Bark hog,* Jacksonville Blow Pipe Co.

This Industry Converts 'Wastes' into Many Valuable By-products

Industry's objective is to eliminate its residuals not by dumping them into rivers in treated form, but by turning them into commercially usable products

This is the second of a two-part article on pollution abatement by the late A. M. Cadigan, formerly of St. Regis, who for years studied and advised on the problem all over the nation. In it, he discusses ways in which the industry is converting its wastes into valuable by-products instead of discharging them into streams.

INDUSTRY'S ULTIMATE OBJECTIVE in the disposal of residuals is complete elimination of wastes through utilization. Much progress has been made in that direction by manufacturing by-products and recovering heat and chemicals from spent liquor. The reduction of effluent load through utilization has increased at a more rapid rate than has disposal in specific production areas. Furthermore, such use of residuals is assuming growing importance in pulp and paper economics.

The late Charles E. Steinmetz, electrical wizard and scientist of General Electric Co., considered the pulp and paper industry as peculiar in that it recovered a by-product—pulp (cellulose)—and discarded as waste the really valuable products of the tree. L. E. Van Blaricon, Olympic Research Division, Rayonier Inc., said that, when the chemical secrets of the tree are unlocked, its value will be at least doubled, as 50 per cent of the wood still is largely lost. He contended that continued lignin research may provide the solution for both valuable products recovery and spent liquor disposal.

The Howard Lime Precipitation Method, one of the first methods of abating stream pollution that recovered a valuable product, was put into operation in 1936 by Marathon Corp. at Rothschild, Wis. This three-stage precipitation process uses lime as the precipitant to recover calcium sulfite, basic calcium lignosulphonate and a carbohydrate effluent. Calcium sulfite is re-used in the process. Other fractions are modified to yield a series of products, one of which is vanillin. Although utilizing only a small part of the available lignosulphonate, it provides practically all of the vanillin used as artificial vanilla flavoring in this country. Other applications are in the fields of ceramic ware, leather tanning, dye dispersion, rubber manufacturing, fungicides, insecticides, water treatment, oil well drilling mud treatment, cement and concrete. Marathon has purchased concentrated spent sulfite liquor from other pulp mills in the state to meet some of its market demands.

Fermentable hexose and pentose sugars present in spent sulfite liquor to the extent of about 20 per cent of the dissolved solids are responsible for 70 to 95 per cent of the biochemical oxygen demand (BOD) of the liquor. Puget Sound Pulp & Timber Co., Bellingham, Wash., ferments spent sulfite liquor for the production of ethyl alcohol. The process consumes the hexose sugars and reduces liquor BOD about 50 per cent. The liquor remaining after distillation is evaporated and spray-dried and recoverd as marketable products now used in agriculture and industry. Puget Pulp recently spent $400,000 for expanding the production of by-products.

Spent liquor from two sulfite mills in Wisconsin, Rhinelander Paper Co., at Rhinelander, and Charmin Paper Products Co., at Green Bay, is fermented for the production of torula yeast. This product, high in protein and vitamin content is used as human food, and in pharmaceuticals and stock and poultry feed supplement. The yeast growth consumes pentose and hexose sugars, thus reducing the BOD of the effluent about 75 per cent. At Rhinelander's mill desugared liquor from the yeast plant (Lake States Yeast Corp.) is treated in a Rosenblad reversible-flow, triple-effect evaporator (first such installation in this country) to produce a desugared concentrate. This is marketed or further processed on a drum drier to produce solid Torulig for sale as an adhesive, a dispersant and a chemical raw material. Any excess is burned as the concentrate.

Recovery before burning

Although recovery of heat and chemicals is the standard means for disposing of black liquor of soda and kraft processes, there is growing interest in processing to recover valuable products prior to burning.

West Virginia Pulp and Paper Co., has been marketing lignin products for many years. Sold as various grades of "Indulin," these are precipitated from soda black liquor. This firm is also the world's largest producer of an activated decolorizing carbon produced by the pyrolysis of black liquor. Users include municipalities and pharmaceutical manufacturers.

Beginning in 1956, Crown Zellerbach Corp.'s Chemical Products Division produced dimethyl sulfide from kraft black liquor in a semi-works plant of 1.5 million lbs. per year capacity at Camas, Wash. Production was via a commercial process developed by Crown Zellerbach from a Swedish discovery. Following removal of dimethyl sulfide, the black liquor goes to the recovery plant and is conventionally processed for reclaiming chemicals and heat.

Crown Zellerbach built new chemical recovery facilities at its Gaylord Division kraft mill at Bogalusa, La. (Editor's note: When this operation went on stream in Jan. 1961, the Camas dimethyl sulfide production was discontinued.) The Bogalusa operation will materially advance the firm's position as a producer of basic chemicals. Rated annual capacity of this installation includes 10 million lbs. of dimethyl sulfide, 5 million lbs. dimethyl sulfoxide, 1 million lbs. methyl mercaptan. This last item, a by-product of the dimethyl sulfide recovery, was not recovered at the Camas operation but was scrubbed out and diverted

to the conventional kraft recovery system.

Another company producing and marketing chemical by-products from sulfite pulp effluent is Consolidated Water Power & Paper Co. of Wisconsin.

Crude tall oil is marketed by many of the Southern mills that pulp pine wood by the kraft process. This product, produced by acidifying the soap skimmings from the black liquor, is a mixture of resin acids (35 to 55 per cent), fatty acids (60 to 35 per cent) and sterols, etc. (5 to 10 per cent). It is present in black liquor to the extent of 70 to 90 lbs. per ton of pulp. Total production of crude tall oil in 1958, according to the Pulp Chemicals Assn. was 331,600 tons.

The crude turpentine obtained by condensing relief gases evolved from pulping of pine accounts for more than 50 per cent of the total production of that commodity in the United States yearly. The pulp industry is expected to be the principal source of turpentine before 1975. This turpentine is used in great quantity in the manufacture of terpene-based chemicals, from which have developed perfumery components and flavoring materials.

NSSC pulping adds problem

Neutral sulfite semi-chemical pulping, being used increasingly for high yields, has added to the stream-load problem. However, residues from this process have a lower organic matter content than do those from conventional sulfite pulping. Operated in conjunction with kraft pulping, NSSC spent liquor is combined, in most cases, with the kraft black liquor for processing in the kraft recovery system. In a balanced kraft mill (production vs. recovery capacity) the production of NSSC pulp will be limited to the "pulp equivalent" of the kraft mill's chemical loss. The ratio usually comes to one ton NSSC pulp per three tons kraft pulp. If it's greater than this, the recovery system must be enlarged.

The practice of mixing NSSC brown liquor with kraft black liquor prior to evaporation resulted in a 30 per cent loss in evaporator efficiency at Weyerhaeuser Co.'s Longview plant. Conditions returned to normal when, instead of mixing the two liquors, the brown liquor, instead of the black liquor, was used as the kraft digester diluent.

Proper disposal of waste from a non-integrated NSSC mill presents difficulties. These units are usually small. Consequently, evaporation or concentration of waste liquor by conventional methods is uneconomical because of the low solids content. As pulp yield goes up, solids content of the waste liquor goes down: Kraft black liquor of solids content 3,000 lbs./ton pulp and heating value of 6,500 btu/lb. dry solids, 1 ton of pulp is equivalent to 19,500,000 btu, whereas, the heating value of waste liquor from NSSC pulping ranges from 6 to 12 million btu/ton pulp.

Depending upon yield, type of wood used, and other factors, NSSC waste liquors range from five to twenty per cent total solids and 25,000 to 65,000 ppm BOD. This spread is broken down thus: (a) where digester charge is dumped and allowed to drain, waste liquor averages 12-14 per cent solids and 35,000 to 40,000 ppm BOD (b) where waste liquor is recirculated, 18 to 20 per cent solids and 55,000 to 65,000 ppm BOD (c) with continuous cooking, seven to nine per cent solids and 25,000 to 35,000 ppm BOD. Two constituents of the liquor, sodium acetate and wood sugars, are responsible for 60 to 80 per cent of the total BOD. Sodium acetate, ranging 12 to 20 gr/L, about 25 per cent of the total solids, accounts for 50 to 60 per cent of total BOD. Wood sugars, mostly pentose as pentosans, ranging from five to ten gr/L, about six per cent of total solids, account for 15 to 20 per cent of total BOD. Any method for treating this waste satisfactorily must be capable of destroying these constituents or of rendering them otherwise harmless.

At Sonoco Products Co.'s Hartsville, S.C., plant, concentrated waste liquor from the NSSC pulping is acidified with sulfuric acid. The resultant acetic and formic acids are recovered for sale. The waste liquor, just prior to evaporation, is fortified in solids by being pumped through a leaching tower counter-current to cooked chips from the digester. Following the recovery of acids the spent liquor (raffinate), rich in sodium sulfate and having a heating value, is sold to a kraft mill.

Six recovery systems in use

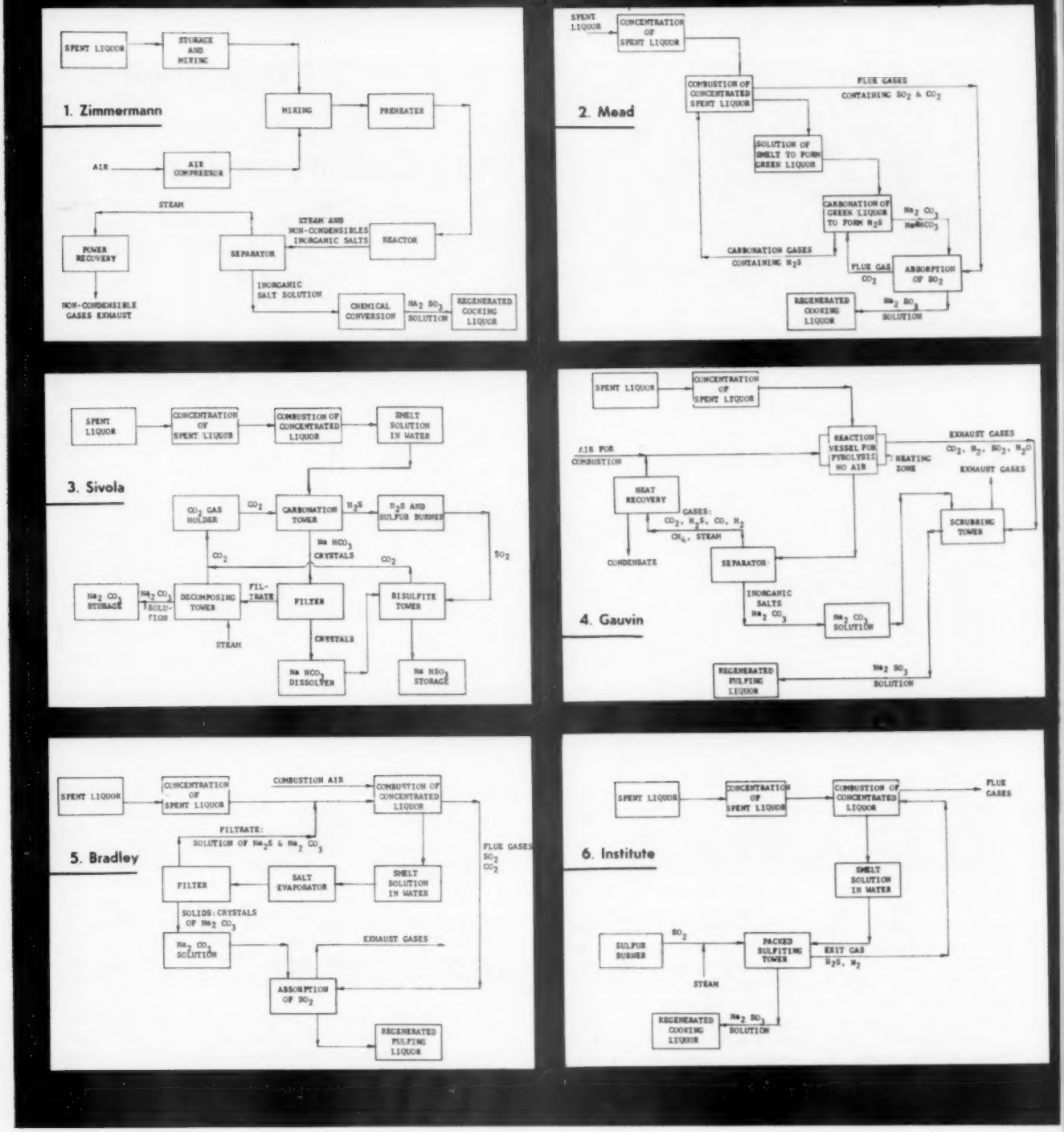
Six different systems currently are being tried out for recovery of neutral sulfite waste liquors:

1. Zimmermann process —wet combustion, developed by Sterling Drug Co. Waste liquor is mixed with high-pressure air (850-1000 psi) and heated to 485-500 F, which converts organic matter to carbon dioxide and water vapor, and inorganic matter to sodium sulfate. At a 30 ton/day unit operated by Hammermill Paper Co. at Erie, Pa., wet combustion was successful, but conversion of the sulfate to sulfite was not proved on a large scale. More needs be known about the economics and recovery of energy present in steam and noncondensable gases. Work at a large plant at Borregaard AB, Sarpsborg, Norway, may furnish some of the needed information.

2. Mead process —developed by Mead Corp. and marketed by Babcock & Wilcox Co. In the process, waste liquor is concentrated and burned. The resultant smelt (sulfide and carbonate) is dissolved and reacted with flue gas. Evolved hydrogen sulfide is burned so sulfur dioxide, which is added to the carbonate in towers to produce cooking liquor (sodium sulfite with some thiosulfate). A 50 ton/day plant of Watervliet Paper Co., Watervliet, Mich., subsidiary of Hammermill Paper Co., uses this method for producing pulping liquor of satisfactory quality. A 200 tpd plant recently put in operation by Mead Corp. of Lynchburg, Va. should give a better picture of operation and the economics.

3. Sivola process —developed by Rauma-Repola OY, in Rauma, Finland, where it has been in operation several years (another plant recently started at a new Tampella mill in Finland). There are no installations in this country. Similar to the Mead process, except that it uses pure carbon dioxide instead of flue gas, it is somewhat more complicated and expensive. Combustion Engineering, Inc., representative in this country, does not recommend installation except for a large-scale bleach semi-chemical plant.

4. Gauvin process —developed by Dr. W. H. Gauvin and associates at the Pulp & Paper Research Institute of Canada. It is a high-



The six processes used to recover neutral sulfite waste liquors

temperature pyrolysis of an atomized suspension in which concentrated waste liquor is sprayed into the top of the reactor tower and burned in the absence of air. Gases from breakdown of organic matter in the reactor are separated from the inorganic sodium carbonate and burned with air to supply indirect head for the reactor. Recovered sodium carbonate, in solution, absorbs sulfur dioxide in the scrubbing of the combusion gases to form sodium sulfite, the cooking liquor. Plans for constructing a 60-ft. high reactor tower, submitted to the Wisconsin State Committee on Water Pollution for approval, have been announced by Green Bay Pulp & Paper Co., Green Bay, Wis.

5. Bradley process —developed and promoted by Western Precipitation Corp. Waste liquor is concentrated and burned. Dissolved smelt is concentrated in an evaporator and the resulting sodium carbonate crystals are removed. The filtrate, sodium sulfide with some carbonate, is mixed with spent liquor then aerated to form thiosulfates and burned in a furnace. The

flue gas, high in sulfur dioxide content, comes into contact with a solution of the sodium carbonate crystals to form the cooking liquor. A 75 tpd plant was tested at Consolidated Water Power & Paper Co., Wisconsin Rapids, Wis.

6. Institute process—developed by the Institute of Paper Chemistry. Waste liquor is concentrated and burned. The dissolved smelt is treated with sulfur dioxide, produced by burning sulfur, thus forming the cooking liquor, which consists of sodium sulfite with some thiosulfate, and evolving hydrogen sulfide, which can be burned for reuse.

Combinations of methods

In handling wastes, paper mills are utilizing various combinations of practically all the methods just described. Most mills operate a "closed" white water system, treating white water for reuse of fiber and water with resultant minimum sewer losses. Filtrating excess white water through a vacuum-drum filter is probably the simplest treatment. This may or may not involve using a pre-coating of fresh pulp for removing fiber and other suspended solids before discharging to the sewer. With pre-coating the content of suspended matter can be reduced to less than 0.2 lbs./1,000 gal. of discharged water.

Most paper mills—particularly those using fillers and/or organic materials such as starch, dyes, etc.—require more elaborate systems to reduce BOD, as well as to remove suspended solids include: (1) filtration or screening; (2) settling (sedimentation) with or without coagulants; (3) air-flotation. Suspended solids can be recovered and reused by plain settling in lagoons, basins, or channels, although coagulants are often used to accelerate separation.

Air-flotation removal involves such systems as the Sveen-Pederson, Adka, Savalla, et al. Suspended solids are carried to the surface by small air bubbles brought into the system as a solution of air dissolved in water under pressure. Aids such as Sveen glue with or without alum and/or rosin size are used. Recoveries of up to 100 per cent have been reported.

Modified activated-sludge treatment is in use at many mills, usually as a secondary stage following the removal of suspended solids by settling in lagoons, basins, tanks.

Trickling filters are in limited use for the biological treatment of mill wastes. The method is rather uneconomical for large-scale operations because of the low rate of removal of BOD and the consequent requirement of extensive equipment.

The types of problems constantly confronting the industry are exemplified by growth of sphaerotilus natans in the lower reaches of the Columbia River. The growth is troublesome to gill-net fishermen. Although the wastes from mills discharge into the river in this region, it has not been definitely established that these wastes were responsible, in whole or in part, for the presence of this slime. However, in order to learn the facts and to find a remedy, if possible, Crown Zellerbach financed a research project, conducted jointly by CZ and Washington state scientists. Studies determined that the presence of nitrogen (furnished by domestic sewage and agricultural fertilizer) was necessary for growth stimulation in the presence of the spent sulfite liquor.

Improvements needed

With a view to improving the overall waste-disposal picture, most of the methods discussed are still being checked and studied.

Studies of efficiency and economics of different types of devices for aerating liquors, sludges, etc., are under way.

The intensive research and investigation programs conducted by the industry over the past 20 years under supervision of the National Council for Stream Improvement, the Sulphite Pulp Manufacturers' Research League, the more recent Northwest Pulp & Paper Association and by individual companies have resulted in accumulating vast amounts of knowledge and information. These accomplishments are reflected in the enormous progress that has been made in keeping the nation's streams clean. It is estimated that at least $10 million annually has been expended by the industry in this 20-year period for improving stream conditions.

It is interesting to note that an increasing number of valuable commercial products are being recovered from the mill wastes.

Perhaps the time for telling an amusing story told by Stanton Mead, president of Consolidated Water Power & Paper Co., is not far distant. The story concerns a manufacturing vice president who called on the sales vice president. The manufacturing v.p. wants to sell more pulp—because it is piling up so high in the mill yard the firm wouldn't be able to keep up with the chemical plant's backlog of orders!

Situations quite similar to this already exist. At least one big producer of "by-products from spent liquor" recently faced a problem of this sort. By-products orders were of such magnitude, and the inventory so limited, that management was pressed to modify the existing policy of shutting down the plant for an annual vacation period.

The industry has done a remarkable job in conditioning its waste-carrying effluents so that the water of receiving streams is not rendered unfit for use by others downstream. In spite of the fact that production of pulp, paper and paperboard is more than double what it was 20 years ago, the pollution load is less than half what it was at that time.

The industry's ultimate goal in its pollution-abatement program is completely to utilize its wastes by turning them into commercially useable products. And in certain sections of the country utilization is now increasing much faster than disposal. ■

REPRINTS AVAILABLE

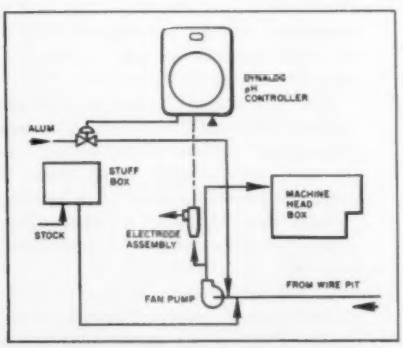
Reprints of the complete two-part article will be available in September at 20¢ a copy Address orders to:

Readers Service Dept.
Pulp & Paper
370 Lexington Ave.
New York 17, N.Y.

Foxboro pH Dynalog Recorder has an input impedance of 80,000 megohms — eliminates the need for intermediate amplification. Span is adjustable from 2-10 pH; zero, from 0-12 pH.

Foxboro eliminates the amplifier from pH recording and control

cuts the drift, cuts the cost, cuts the maintenance, too!



TYPICAL PAPER MILL pH control application, showing electrodes direct-connected to Foxboro Dynalog Controller — without intermediate amplification.

THAT'S RIGHT — the intermediate amplifier is gone from Foxboro's new low-cost system for measuring pH. And gone with it is the wasted panel space, the drift, the daily standardization inherent with earlier systems.

In the new Foxboro system, the signal from the pH electrode goes direct to a high impedance Dynalog* receiver — without intermediate amplification. Signal operates a direct-reading indicator or recorder — or a controller and alarms, when desired.

The new Foxboro pH system is the simplest, most economical method of measuring pH available today. Ask your Foxboro Field Engineer to tell you about it. Or write for Bulletin 19-12. The Foxboro Company, 999 Neponset Avenue, Foxboro, Massachusetts.

*Reg. U.S. Pat. Off.

FOXBORO
REG. U.S. PAT. OFF.
Analytical Instrumentation

	POPULATION INCREASE 1937–1959	PAPER CONSUMPTION GAIN DUE TO POPULATION GROWTH	PAPER CONSUMPTION GAIN DUE TO INCREASED PER CAPITA CONSUMPTION
USA	37 %	26 %	74 %
CANADA	63	32	68
FRANCE	7	3	97
UNITED KINGDOM	6	13	87
AUSTRALIA	51	55	45
NEW ZEALAND	50	28	72
SOUTH AFRICA	49	23	77
FINLAND	18	8	92
NORWAY	24	15	85
SWEDEN	19	14	86

U. S. A.

	POPULATION INCREASE	PAPER CONSUMPTION GAIN DUE TO POPULATION GROWTH	PAPER CONSUMPTION GAIN DUE TO INCREASED PER CAPITA CONSUMPTION
1901 - 1910	21%	24 %	76 %
1911 - 1920	15	18	82
1921 - 1930	16	26	74
1931 - 1940	7	20	80
1941 - 1950	15	20	80
1951 - 1960	19	56	44
AVERAGE		27	73

Per Capita Consumption, Not Growth In Population, Determines Demand

By DR. A. NEIL McLEOD Economist, Institute of Paper Chemistry

ECONOMIC FORECASTS of the future of the paper industry over the next several decades look forward to an economy that will absorb a greatly increased production of paper. Population growth is given favorable weight in most of the forecasts, the tacit assumption being that demand for paper is a function of population growth.

But an analysis of "World Per Capita Paper Consumption" by the Export Committee of the American Paper and Pulp Assn. reveals that there is no predictable relationship between population growth and the increase in total apparent consumption of paper.

In the U.S. we count the people every ten years, and, in the intervening years, their numbers are estimated. This is a pleasant fact for those who deal in numbers. It provides a reasonably concrete, readily understood statistic, upon which to base a relationship. Projecting population numbers into the future has proven to be a hazardous business. But the demographers now present several well-defined estimates that are revised as evidence warrants. During the past 15 years the increase in paper production in the U.S. has coincided with an increase in population. These two facts have been so prominent that they have tempted some to look at the population estimates for the future and to conclude that they, in themselves, will engender a considerable increase in the total demand for paper.

The effect of population growth upon consumption varies widely among countries that may be considered important in paper production and consumption. One of the accompanying charts shows population increase as a percent of 1937 and the increase in total paper consumption that is due to population growth and the portion of increased paper consumption due to increase in per capita consumption.

The countries that might be expected to have similar response have been grouped. Canada and the U.S., with very different rates of population growth, show a reasonably similar response of total paper consumption to population growth and to increased per capita consumption with increased per capita consumption much more important.

Australia, New Zealand, and South Africa, with very nearly the same rates of population growth, show greatly varying responses. Increases in per capita usage account for only 45% of increased consumption in Australia, compared with 72% and 76% in New Zealand and South Africa.

As might be expected in France and the United Kingdom, with very small population rises, most of the increased consumption has been due to climbing per capita use. But, again showing the inconsistency of the effect of population, although the United Kingdom's population growth was less than that of France, its dependence on population was greater.

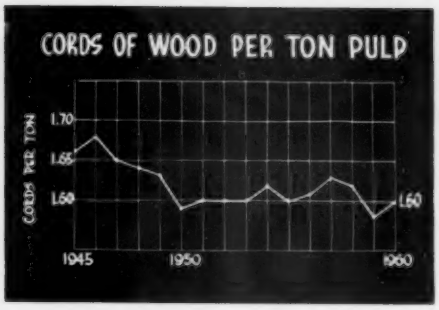
In general it can be seen that there is no constancy in the degree to which these different countries have been dependent upon population growth as a factor governing their increases in paper consumption.

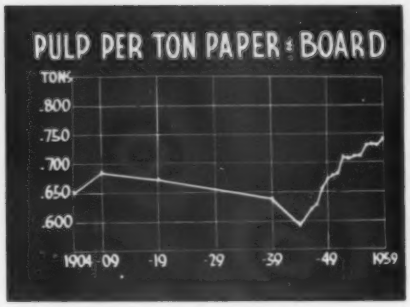
Although the world picture provides no discernible relationship between population growth and increases in paper consumption, one may wonder whether population has a more specific effect in the United States.

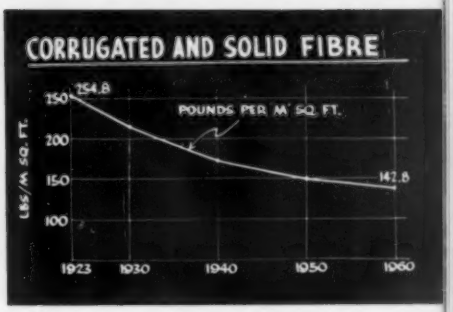
From 1900 to 1960 the variation in the growth of population among census periods has been significant. But despite these gyrations, the percentage increase in paper consumption due to population growth has been remarkably stable, except for the most recent decade. The increased use of paper per capita accounted for an average of 73% of the total increase in paper consumption throughout the nation.

The last decade seems to be a disturbing point off the curve. Although population growth was within our previous experience, total gain in paper consumption took a turn from growth due to new use toward an unhealthy dependence on population growth.

In this century nearly three quarters of our industry's growth has been the result of rising per capita use. Population growth thus loses some of its potency in determining our industry's future. Unfortunately, there is nothing







Less fiber is doing more work . . . but only slightly less wood is being used per ton of pulp . . . bleaching losses offset higher pulp yields . . .

predictable or statistically certain about new uses for paper as there seems to be about population growth.

New uses for paper are the result of enterprise. A growing population merely increases the fruitfulness of enterprise. We do not need a statistical crutch, such as population growth, to account for our past performance, nor will we need it for future achievements.

Enterprise must continue to typify our industry. Because our growth has been largely due to new use, this becomes the area that competitors with substitutes will shoot at.

If we can conclude then that population growth will not, necessarily, importantly affect our market, we cannot at the same time ignore its certain impact in another area. Growing numbers of people will press upon this nation's land resources. Part of the pressure is already being felt in the rapid disappearance of acreage before expanding suburbs.

Not so apparent to the average citizen is the press of growing numbers of people upon our forested areas.

What kind of an account can we render for our use of land? When we are asked this question we are inclined to think first of the significant productivity of our forest lands. Forest management, under increasing demands from the forest products industries, can point to an era wherein growth now exceeds drain. Forests under pulp-manufacturing ownership are more productive than forests under other kinds of ownership, with 84% in the top level of productivity.

But haven't we, in effect, multiplied land resources even beyond this? Haven't we extended the yield of fiber per acre, after it leaves the forest, through research, technology, and liberal doses of capital?

We know there has been an increase in high yield pulping processes, which should mean more pulp per cord. We also know that we are using machines of greater complexity to achieve more control, and we have closed up the systems so that we must be getting more tons of paper per ton of pulp. When the statistics do not support such conclusions, it is startling.

We are not using less wood per ton of pulp. It has remained remarkably constant. Why doesn't our high yield pulping show up?

Although high yield groundwood has been increasing in total tonnage, it has been decreasing in relation to total pulp. Secondly, although higher yield chemical and semi-chemical pulping has been increasing in relation to total pulp, its effect has been lost due to the opposite effect on yield of increased bleaching. Bleaching losses on semi-chemical pulp run about 20%.

We would expect also to find that we are now using less fiber per ton of paper and board. Closing systems and reducing fiber loss, increasing the use of additives, fillers, and coatings to the sheet, should result, we assume, in the use of less fiber per ton of product. The statistics again do not support the assumption.

The consumption of woodpulp per ton of paper and board has climbed steadily since 1944, except for minor year-to-year variations from .611 to .740 tons of woodpulp per ton of paper and board.

In every year since 1950 woodpulp per ton of product has been higher than it was in 1919.

The big boost in woodpulp use per ton of paper and board is explained by the demands for a virgin sheet. This has been accompanied by a reduction in the relative importance of secondary fiber from waste paper and the virtual elimination of straw.

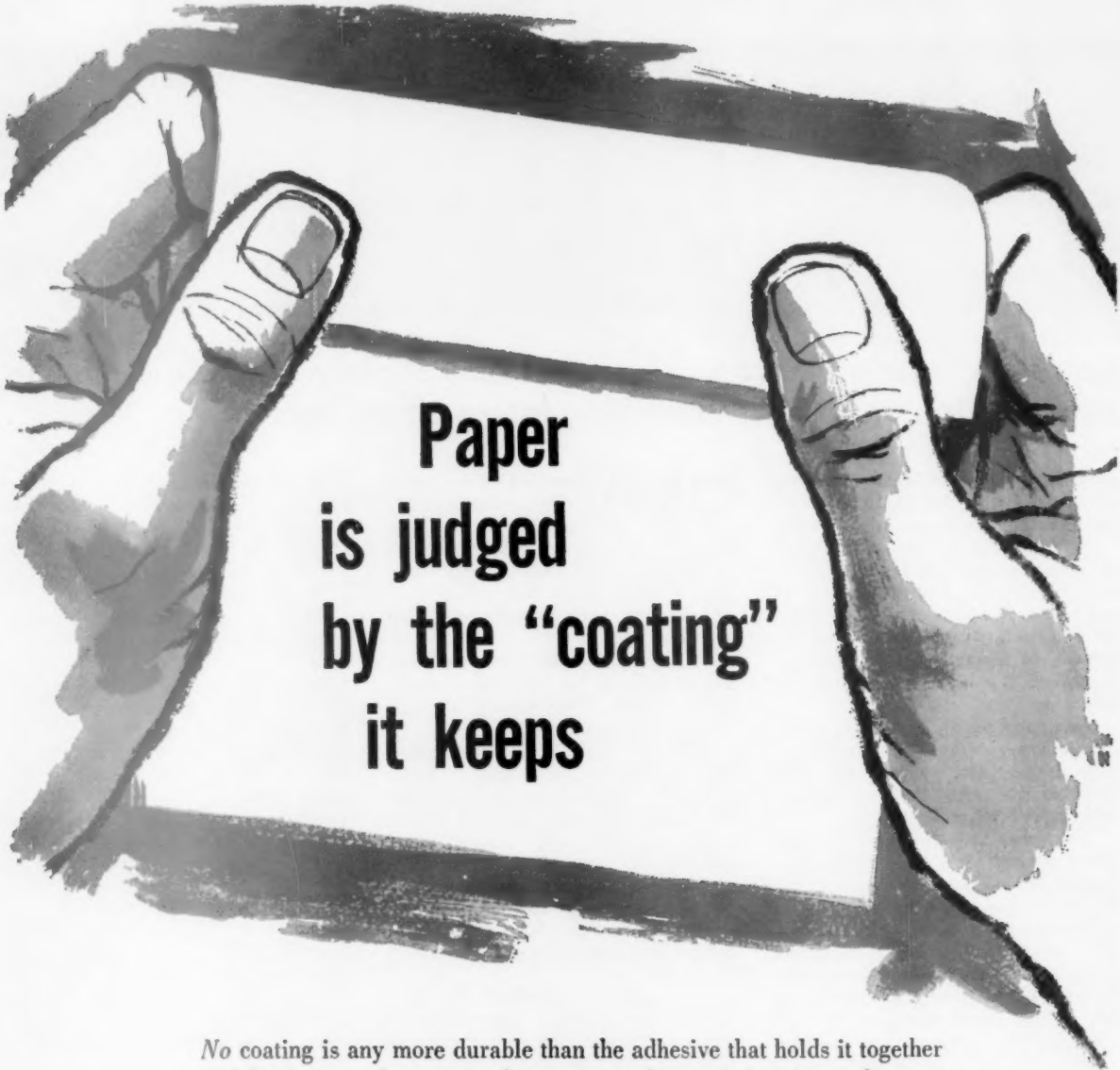
So we cannot point to utilization of pulpwood per ton of pulp, nor pulp per ton of product, to illustrate our extension of land resources. But the use of such aggregate statistics is often futile in achieving understanding. Two important points are hidden in these over-all figures.

First, in some grades significantly more work is being done by less fiber. We know that 26 lb. corrugating medium has replaced 34 lb. and that other grades of solid fiber have been lightened. Since 1923 we have reduced the weight of materials per M sq. ft. from 254 lb. to 142 lb., a gain of 112 lb. The shift to starch adhesives during this period may account for as much as 10 lb. per M sq. ft., leaving a net gain of 102 lb. per M sq. ft.

The savings from this improved utilization of fiber, when converted to cords of wood and then to acres of forest land, mean that this one area of our industry has, in effect, extended our forest land by almost 40 million acres, based on the average productivity of all forest land. This is equivalent to about three quarters of the 62 million acres of commercial forest land owned by all forest industries.

If we are more conservative and base the conversion on higher productivity of forest lands owned by our industry, we have extended our forest land by about 16 million acres.

Such extension of our land utilization could be further increased very dramatically if our statistics permitted a similar calculation to be made for all other grades. As we have moved from uncoated grades to coated grades, the reduction in fiber has been obscured by the increased coating weight. But the general magnitude of the correction that could be made to our extended acreage is hinted at when 176,800 acres equivalent has been saved merely by the shift in catalog paper from 28 lb. to 25 lb. and 22½ lb. ■



Paper is judged by the "coating" it keeps

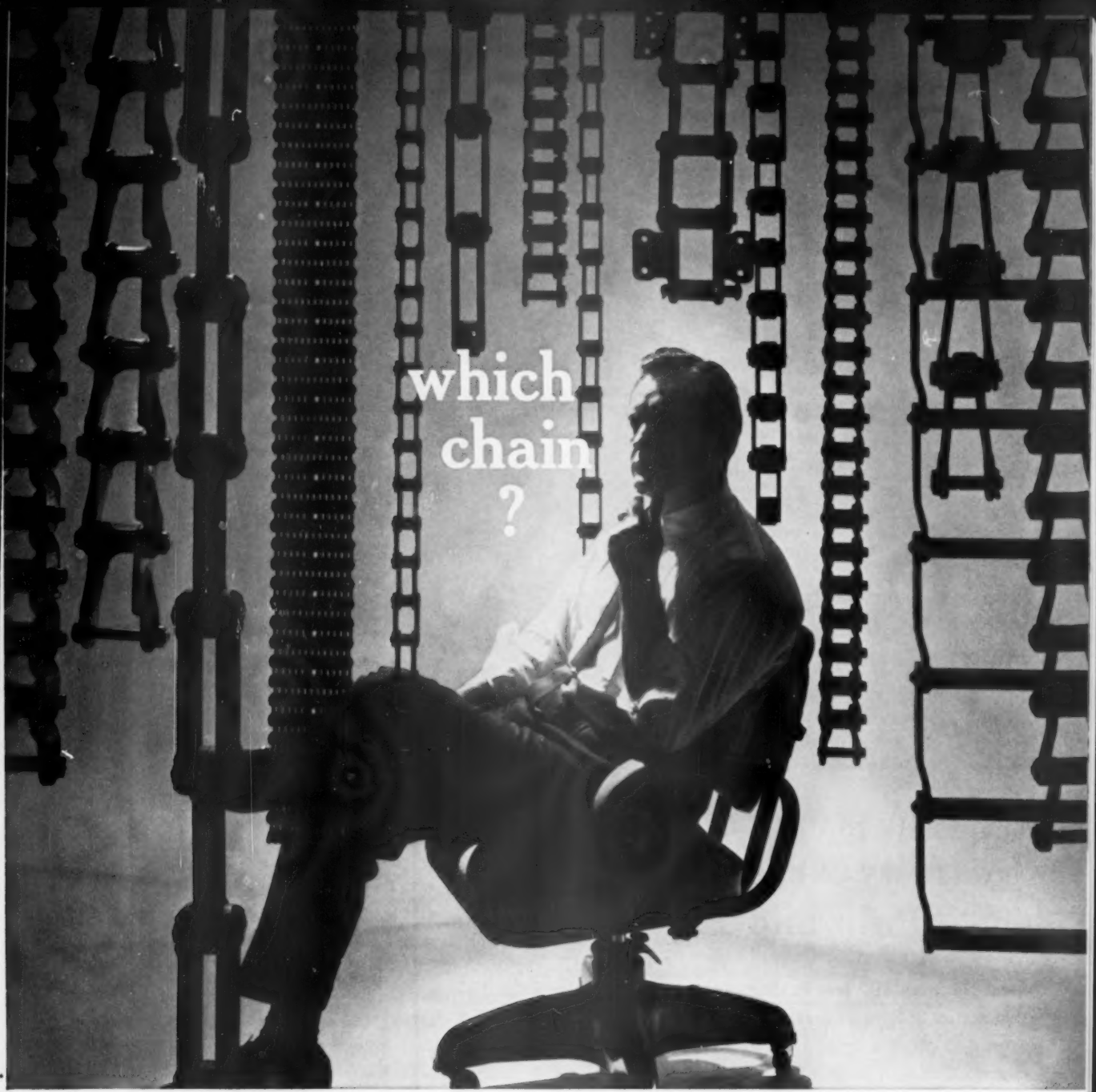
No coating is any more durable than the adhesive that holds it together and binds it to the paper. CLINTON starches and dextrins make sure that your coated stock has a uniform finish free from "skips." Used as a clay coating or as a size, CLINEO starches add a high degree of strength and gloss printing quality to gloss surfaces. CLINCAL starches — containing their own lubricants — improve printability and control curl. Both starches are available in many varieties. For quality that makes a lasting impression on customers and prospects, use CLINTON coating starches.

Watch Clinton for new product developments

CLINTON CORN PROCESSING COMPANY

CLINTON

CLINTON, IOWA



save your time...ask Link-Belt

OFFERING YOU HUNDREDS OF STANDARD CHAINS—Link-Belt can help you choose the one chain that's precisely *right* for your power transmission or conveying application. Each chain is as individual as a thumbprint, with characteristics mated to specific job needs. And Link-Belt experience is at your service—to help you evaluate particular performance factors . . . to save you time in choosing the one best chain for your application (in terms of high efficiency, low *total* cost). Contact your nearby Link-Belt district office or authorized stock-carrying distributor. Ask for catalog 1050 covering the complete line of Link-Belt products and components for materials handling and power transmission.

LINK-BELT

CHAINS AND SPROCKETS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants, Warehouses, District Sales Offices and Stock Carrying Distributors in All Principal Cities. Export Office, New York 7; Australia, Marrickville (Sydney); Brazil, Sao Paulo; Canada, Scarboro (Toronto 13); South Africa, Springs; Switzerland, Geneva. Representatives Throughout the World. 15,714

5 OF THE 19 STEEL STRUCTURES CB&I FURNISHED FOR WARREN'S MUSKEGON, MICHIGAN PULP MILL

ABOVE (bottom to top of photograph)

1. 122-foot waste clarifier
2. 137-foot cone roof water reservoir
3. 190-foot water clarifier

BELOW (left to right in photograph)

4. 56-foot chlorination tower
5. 40-foot foam tower

Questions of Bigness and Quantity Never Frighten Our Pulp and Paper Experts

Steel clarifiers 190 feet in diameter, steel water reservoirs 137 feet across, towers 57 feet tall—are typical of CB&I storage structures and process equipment at S. D. Warren Company's Muskegon, Michigan pulp mill.

If it is built of steel or alloys, so successfully fabricated by CB&I to combat corrosion, there are few processing and storage structures CB&I doesn't furnish. CB&I design engineers, fabricating craftsmen and erection experts have years of experience in building steel plate work for the industry.

That's why when your quests are for bigger and more efficient storage and processing units to meet your requirements, you should call on CB&I.

CB&I

Chicago Bridge & Iron Company
332 South Michigan Ave., Chicago 4, Ill.
Offices and Subsidiaries Throughout the World

CB-619

US RUBBER **ANNOUNCES**

WEATHERGARD

THE NEW, MORE DURABLE CONVEYOR BELT COVER

Now makes superior Ozone Resistance a Standard Feature of all U. S. Giant® Conveyor Belting

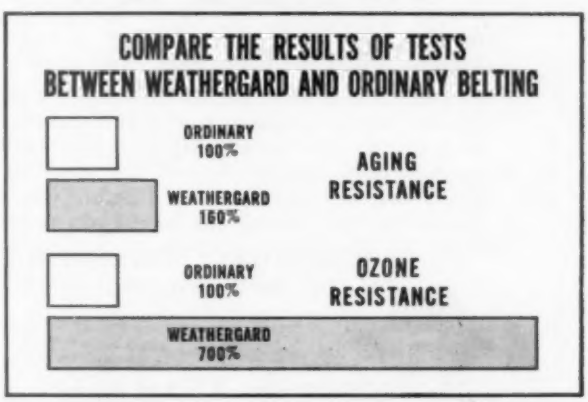
United States Rubber Company has achieved its position as the leading authority in Conveyor Belting through the many "firsts" it has made in this field. Now US brings another major development to Conveyor Belting—the WEATHERGARD cover.

In recent tests, the new WeatherGard cover for Giant Conveyor Belting was subjected to seven times the ozone torture that causes ordinary belt covers to crack and, in turn, fail. The WeatherGard did not crack nor did it give any indication of cracking even after these exhaustive tests.

Further pointing out the toughness and durability of the WeatherGard were tests that showed it to have a substantially greater resistance to cracking from accelerated aging.

In addition, the WeatherGard cover resists damage from smog, sunlight, and weather checking. And . . . besides protecting against these factors that cause ordinary belts to fail, U.S. Giant with its WeatherGard cover is abrasion and wear resistant.

The new WeatherGard cover is standard on all U.S. Giant Conveyor Belting at no extra cost. See your US Representative or Distributor.



WORLD'S LARGEST MANUFACTURER OF INDUSTRIAL RUBBER PRODUCTS

US RUBBER **United States Rubber**

MECHANICAL GOODS DIVISION

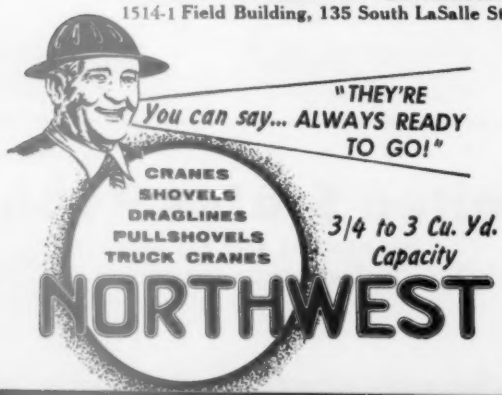
Rockefeller Center, New York 20, N.Y.

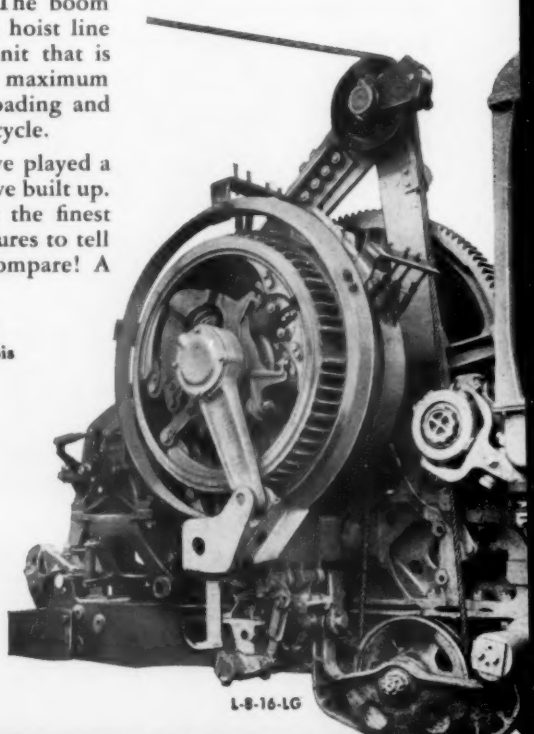
NO OTHER BOOM HOIST EQUIPMENT LIKE THIS!

COMPARE it with *any other*! Watch it work! Northwest Independent High Speed Boom Hoists are the ultimate in a boom hoist that is precise, fast and durable. It is a complete unit and is specifically designed for crane work where constant booming is a requirement. It is not an adaptation or modification of the ordinary spur gear type boom hoist. It is independent in operation of all other machine functions. The boom can be raised or lowered with or without a load on the main hoist line and it is power controlled both up and down. Here is a unit that is unique for its high capacity for continuous operation under maximum load without overheating or fading. It is the answer to log loading and decking, where the boom angle must often be changed every cycle.

Here is another of the many Northwest advantages that have played a part in the big output records that Northwest Log Loaders have built up. It is one of the many things that has made the Northwest the finest machine of its kind. Northwest has many new log loader features to tell you about. Get into the details before you buy! Look and compare! A Northwest man will be glad to tell you all about them.

NORTHWEST ENGINEERING COMPANY
1514-1 Field Building, 135 South LaSalle Street, Chicago 3, Illinois





L-8-16-LG

SUBSTANTIAL COST SAVINGS in labor involved in wood preparation and hauling is biggest advantage of tree-length logging. Charge of poor forestry practices is disadvantage.

Tree-length logging's value is often debated. In its favor are better use of equipment, less road building, more production per man per day. Opponents say that with stump-prepared wood, tops are more thoroughly used, danger of fire is minimized, less damage is done to standing trees. In this special report, members of the American Pulpwood Assn. Northeast Technical Committee discuss . . .

TREE-LENGTH LOGGING
Pro & Con

More attractive work . . .

ROBERT MOODIE, Scott Paper Co., Winslow, Me.

THE GREATEST OPPORTUNITY for substantial cost savings in producing pulpwood is in the reduction of manual labor in wood preparation and transport.

It has been shown that an average of 27% of the cutter's time is spent piling and preparing pile bottoms. Measuring and bucking adds up to 35%. Yarded 4 ft. wood reduces this time and results in greater production despite the greater movement of wood. Tree-length logging, an application of work simplification, eliminates manual handling.

Tree-length logging is more attractive work to labor. It

Ground conditions not suitable in N.E. . . .

H. D. PHILLIPS, St. Regis Paper Co., Deferiet, N.Y.

TREE-LENGTH LOGGING is severing the tree from the stump, removing the top and skidding the stem to the haul road or loading point without regard to the products contained in it. My opposition to the method depends on this definition.

Markets must be found for all material extracted. A majority of operators in the Northeast cannot afford to bring wood to the roadside because of lack of markets for high price wood, or the expense of removing low value products.

Pro

requires skill, but less physical exertion than other methods and should result in a better, more stable labor force. In some areas more than 1,000 cords per cutter per season is being attained. Payment by hourly wage with production bonus is realistic, especially because increased man-day production will bring lower labor costs.

Machine production of 4 ft. wood often is tied to manual loading or handling. . . . For maximum machine production . . . it is logical to handle the largest volume at one time . . . and to keep trees in their original length. New machines will trend more to handling several at one time. Multi-product production is the most suitable method for harvesting all species and products in one operation.

Less road building, more production . . .

ROBERT S. TRUE, S. D. Warren Co., Cumberland Mills, Me.

THE EXPERIENCE of the S. D. Warren Co. for the past 10 to 15 years has been almost entirely with tree-length logging of hardwoods . . . at Bingham and at Bridgton. We work 10½ to 11 months a year. . . . Last year the crew at Bingham produced 6,263 cords of hardwood pulpwood, 446 cords of maple bolts, 172 cords of softwood pulpwood and 338 cords of veneer logs We have integrated this job for several years. . . . Logging tree-length, where our average distance is ¾ mile, has advantages over going directly to the stump and processing short wood. We have yarded wood up to 1¼ miles, but it has to be good wood with ideal conditions to make this distance pay. . . . We have some savings in using tractor roads rather than building expensive truck roads.

Some advantages of tree-length logging are: better use of mechanical equipment; less road building, more production per man per day; less handling of sticks. . . .

Our truck haul at Bingham is only 10 to 12 miles, but at Bridgton it is sometimes 50 miles. Our drag saw . . . is far cheaper to operate than would be several power saws and men in the woods. . . . We cut crooked northern hardwoods into 4 ft. lengths before trucking.

As mechanical debarkers are improved, we hope to bring in long-length material, remove the bark, chip, and store as chips instead of round wood.

TYPICAL OF EQUIPMENT required for tree-length logging is this Caterpillar D6 tractor with Hyster winch, used to skid logs in operations at Mount Morris, New York.

Con

Ground conditions in the Northeast are not suited to tree-length logging. Needed are easy grades, well-drained soils and the absence of ledges and boulders. Also, machines must be run through 3 to 6 ft. of snow, common in the Northeast.

It may be true that this method requires less bulldozing of roads. However, I am not impressed when I see the morasses created by machines plowing through deep mud. Progress is slowed, logs become dirty and unfit for the sawmill unless debarked, and the high-priced machine is exposed to excess wear and maintenance cost. Skid trails take out of production many acres of land through erosion alone. Fire hazards are high after merchantable clear cut.

The average independent operator cannot afford the investment equipment for this operation. His volume is usually not large enough to justify capital development.

Tree-length logging is not compatible with good forest management in the Northeast. Clear cutting is not the desirable method for most northern species. Clear cut softwood stands are a poor investment in future growth. The same should also be said of hardwoods.

Not good forestry practice . . .

S. W. HAMILTON, West Virginia P&P, Mechanicville, N.Y.

OUR PROCUREMENT EXPERIENCE at Mechanicville is perhaps quite different from most mills in the Northeast.

When we moved from softwoods to hardwoods in June 1956, the scene changed overnight from procurement of sap-peeled softwood by rail from distant points to truck-delivered hardwoods from within 50 to 75 miles from our mill. We have become familiar with the small operator whose total production will seldom reach 500 cords annually . . . who owns his own stumpage, prepares his wood and delivers it. He is a part-time seasonal worker. His woodlot is usually small, therefore, so is his operation. His equipment is not usually up-to-date or highly efficient . . . but these little operators represent ¾ of our suppliers, at least 85% of which prepare 4-ft. wood at the stump and truck it to the mill.

Tree-length logging is for the larger producer who has the capital, whose area of operation is quite extensive, whose labor force is high and who receives commission payments when production reaches a certain volume. . . . We should not overlook the greater skill requirements for operators of heavy equipment and the higher pay rates with heavy units in tree-length skidding.

For the woodman with limited resources in money, land and timber, and who takes pride in the development of his timberland, tree-length logging does not offer the many advantages or inducements that recommend bucking the wood before it is moved.

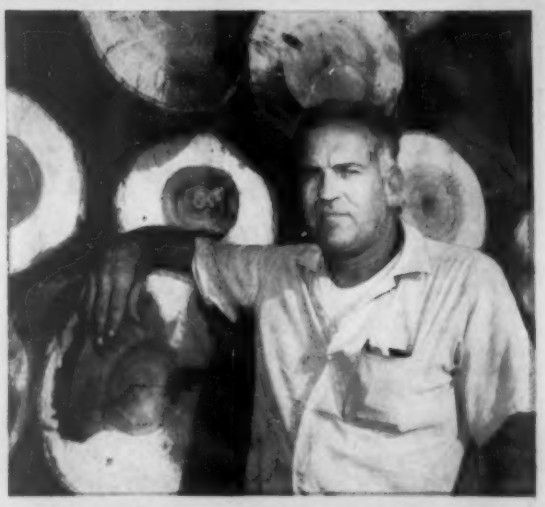
These woodlots, usually a few acres located nearby, have well established roads in use for years. It is certainly cheaper to prepare the product at the stump for delivery to the mill. . . . These roads will not suffice for tree lengths and heavy equipment. Roads must be wider at turns . . . culverts, bridges and water bars must be more rugged . . . Off-the-road logging in soft and wet ground is even worse. Tractor, arch or entire load may sink or bog down.

In stump-prepared wood . . . tops are more thoroughly used and danger of fire is greatly minimized. Perhaps more important from the forestry standpoint is the manner in which tree-length logs rub, wedge and whip against standing trees . . . causing severe strain sometimes enough to break equipment. ■

"We haven't found a place where the 1010 won't go"

A new 40 h.p. John Deere "1010" makes mountain logging pay for Russell A. Stevens of Arrington, Virginia. "We haven't found a place on these steep Virginia mountains where the 1010 won't go," he reports. "And I wouldn't be without the direction reverser."

Hydraulically operated from the instrument panel, the new John Deere direction reverser features two heavy-duty wet clutch packs, also used for changing gear speeds. This development, together with improvements such as new 4-cylinder power, 4-bolt track pads, high-clearance fenders, and advances in blade control, help to insure high productivity in almost every kind of logging condition.



R. A. Stevens of Arrington, Virginia, in the logging and sawmill business for ten years, now operates on a 700-acre Appalachian tract.

CREDIT PLAN AIDS MODERNIZATION

Many loggers have used the convenient John Deere Credit Plan to increase their spread or bring it up to date. Consult your John Deere dealer through the yellow pages for more information or write today.

JOHN DEERE • 3300 RIVER DRIVE • MOLINE, ILLINOIS

JOHN DEERE TRACTORS BULLDOZERS AND LOGGING EQUIPMENT

JOHN DEERE

Chips Unloaded to Above-Ground Bin

Menasha adopts this system because of high water table

—North Bend, Ore. CHIPS FOR THE MILL of Menasha Wooden Ware Corp. here are discharged into an unusual bin installation, which was built above ground level because of the high water table in the area.

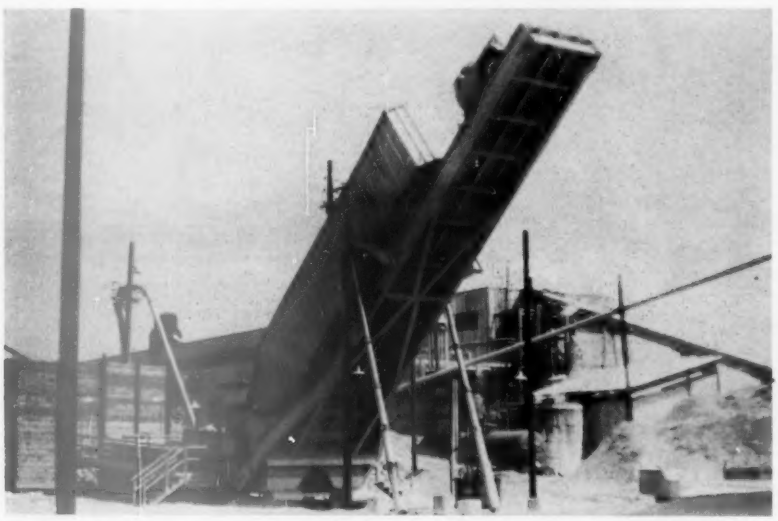
Wood is delivered by truck in three forms—Douglas fir chips, hog fuel, and alder logs. The chips and hog fuel come from the company's plywood mill. The alder, 75% of the total wood supply, is delivered as logs.

The chips and hog fuel are unloaded by a hydraulic dumper, which discharges into the bin. Two conveyors at the bottom of the bin deliver the wood to a cross-conveyor that carries it to a two-line conveyor system, which, in turn, delivers the chips to an outside storage pile and the fuel to a separate pile.

The alder logs are removed from the trucks by a log stacker, which places them on the live deck of the wood mill or in storage. The logs pass through a rotary debarker en route to a horizontal chipper. The chips are screened, then pneumatically discharged to an outside alder storage pile.

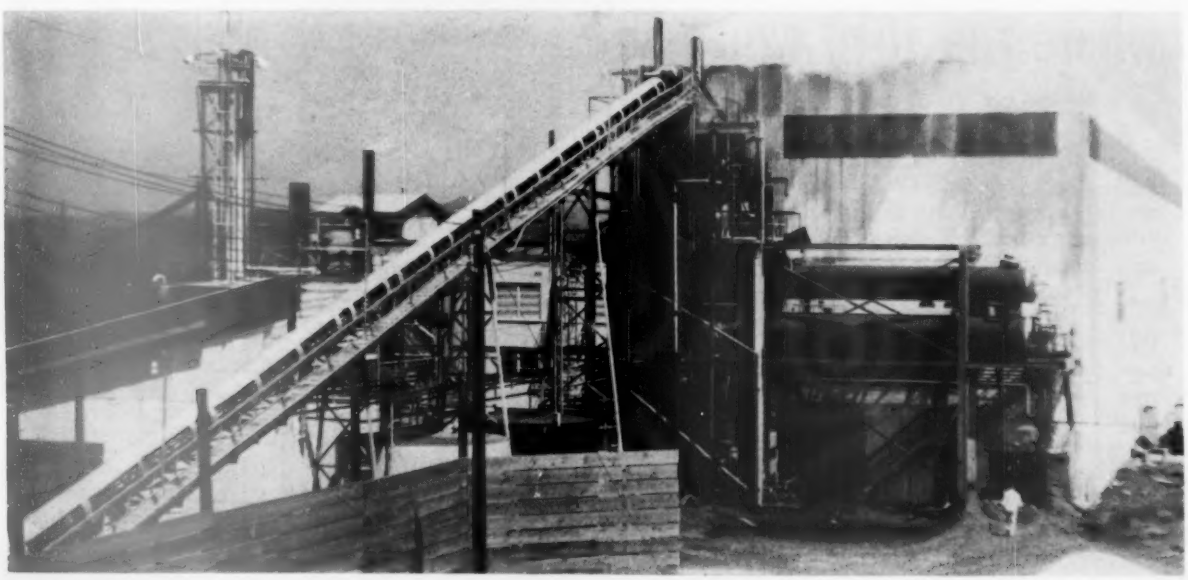
Chips recovered by plate feeders beneath the storage piles (both those of alder and Douglas fir) are carried together to a washer, in which spent liquor is used as a cleaning solution.

Washed chips travel up a covered, inclined conveyor to the surge bin. ■



HYDRAULIC DUMPER unloads cargoes of chips and hog fuel to outside bin.

LOGS DEBARKED on way to chipper.



WASHED CHIPS move up a canopied, inclined conveyor to surge bin situated above continuous digester.

From S. W. Hooper: a time-and-pressure bark dehydration method

A waste disposal problem produced the Cowan bark press

A wet sponge is not just squashed, it is squeezed. Similarly two factors — time and pressure — are needed to dehydrate bark. This is the principle of the Cowan bark press, which applies sustained and progressive pressure to turn wet bark into combustible material. An oil hydraulic system regulates a feed plunger and pressing beam operating in a chamber with three force-drainer sides.

Water escapes freely because the floor and walls of this unique pressing chamber are of heavy steel plate perforated overall.

The feed-and-press cycle is completely adaptable as to speed and pressures by simple adjustments of throttle valves and limit switch settings.

Sustained pressure allows time for water to drain away. But the unit responds automatically to the rate of feed, and accepts increased loads where moisture tolerance is higher. It can withstand many times the cyclical pressure peak of 1800-2000 p.s.i., and thus will not be harmed by stones or tramp iron in the load.

The simplicity of the design has permitted an all-welded structure with few moving parts. Low initial cost, limited maintenance and considerable fuel savings mean that one or several units can be installed, giving flexibility of operation for high or low production rates.

Now is the time to discuss bark pressing. Your letter, phone call or wire will get prompt action.

S.W. HOOPER CORPORATION

Manufacturers of pulp and paper mill equipment
P.O. Box 129, Delmar, N.Y. Telephone HEmlock 9-5231

In Canada: S.W. HOOPER & CO. LTD. 5460 Patricia Avenue, Montreal 29 Telephone HUnter 1-1161

2788

COMPETENT OVER 80 YEARS

for

PULP AND RELATED SERVICES

WOOD PULP

Representing:

Champion Paper & Fibre Co.
The Chesapeake Corporation of Virginia

NORWAY:

Anth. B. Nilsen & Co.
A/S Hurum Fabriker, *Bleached Sulphate*
A/S Katfos Fabriker, *Unbleached Sulphite*
A/S Krogstad Cellulosefabrik, *Bleached Sulphite*
A/S Tofte Cellulosefabrik, *Bleached Sulphite*
A/S Toten Cellulosefabrik, *Bleached Sulphite*
A/S Viul Tresliperi, *Dry Groundwood*

GERMANY:

Zellstofffabrik Waldhof, "*Beechopake*" *Hardwood Sulphite*

BLEACHED COTTON LINTER PULP

Agents for:

Southern Chemical Cotton Co., *Tailor-made Pulp for Your Individual Use*

UNBLEACHED KRAFT, SULPHITE & GROUNDWOOD

Distributors for:

Consolidated Paper Sales, Ltd., *Unbleached Sulphite—Unbleached Kraft*
Spruce Falls Power & Paper Company Ltd., *Unbleached Sulphite*
The Ontario Paper Co., Ltd., *Unbleached Sulphite—Groundwood*
The Mohawk Corp. Ltd., *Groundwood*

WASTE PAPER

Suppliers of all types, Specializing in High Grades,
Direct Pulp Substitutes and Overissue News

NEWSPRINT SIDERUNS

Castle & Overton, Inc.

ROCKEFELLER CENTER • 630 FIFTH AVENUE
NEW YORK 20, N. Y.

PHILADELPHIA — HOLYOKE

Telephone: CIRCLE 7-7121

Cable address: CASERTON, NEW YORK

SARAN LINED PIPE carries 50,000 gal/day of ClO_2 for 5 years—only 1 elbow replaced!

More than 1100 feet of Saran Lined Pipe continuously carries highly corrosive chlorine dioxide—in both gaseous and solution form—for West Virginia Pulp and Paper Company's Covington, Virginia, plant. Over the past five years, this line has carried more than 18,000,000 gallons of this corrosive material. *Not a single length of pipe has failed from corrosion*—only one elbow has had to be replaced!

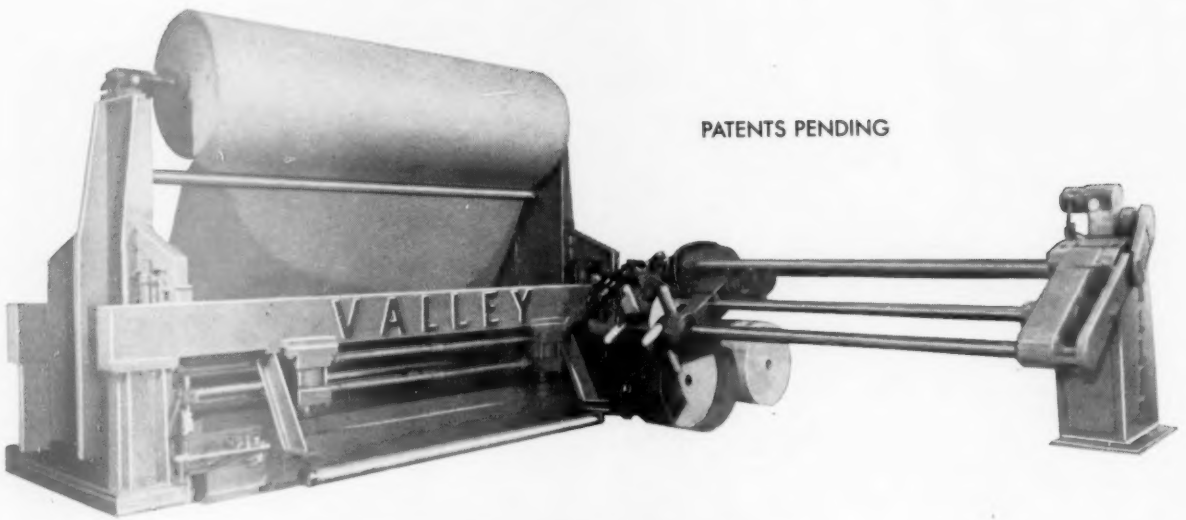
"In our experience, Saran Lined Pipe provides maximum resistance to corrosive liquids, and the best dollar value in terms of original cost and maintenance costs," says Superintendent E. K. Scholz.

"One advantage of Saran Lined Pipe—in addition to its corrosion resistance—is outstanding thermal tolerance. Sudden changes of temperature over a wide range won't crack it. And we don't have to carry a large inventory of Saran Lined Pipe on hand . . . only a few feet of various pipe sizes, plus a small quantity of spare flanges and fittings."

When your plans call for piping systems that must be physically strong, with maximum resistance to corrosion, consider Saran Lined Pipe. Saran Lined Pipe, fittings, valves and pumps are available for systems operating from vacuum to 300 psi, from below zero to 200° F. They can be cut, fitted and modified easily in the field without special equipment. For information, write Saran Lined Pipe Company, 2415 Burdette Ave., Ferndale, Mich., Dept. 1571JJ9-4

THE DOW CHEMICAL COMPANY DOW Midland, Michigan

NEW and REVOLUTIONARY



PATENTS PENDING

**wraps smoothly . . . faster . . .
with minimum supervision . . . in
smaller floor area . . . at lower cost**

Each phase of automatic time cycle can be individually activated by turning control console selector switch to manual, and pressing individual operation pushbutton mounted on the console board.

. . . ROLL-WRAPPING SYSTEM

wraps a roll AUTOMATICALLY in less than 1 minute!

ANOTHER VALLEY FIRST! Now . . . a completely automatic, flexible *right angle* packaging system. Cuts wrapping paper to required size without manual settings, wraps and crimps ends ready for gluing on headers (Can be varied to use inner heads only – combination of inner and outer heads – or an outer head only). Wraps single or multiple ply including vapor seals. Unique console-control system shown will wrap paper rolls of varying sizes, one after the other in face lengths of from 7″ to 112″, and 15″ to 42″ diameters (These are *not* limiting dimensions). Crimper head makes hard, firm, uniform pleat for tight packaging, thereby assuring ultimate consumer of a superior product from your mill. Space-saving system includes conveyors, roll wrapping machinery, glue system, roll headers, scales, crimpers, dispensers and cutters, and lowering devices. Eliminates need for expensive trimming machines, unsightly glue pots, and other inconveniences common to normal wrapping methods.

VALLEY

INQUIRIES CONCERNING SPECIFIC ROLL PACKAGING NEEDS INVITED . . .

by VALLEY IRON WORKS CORPORATION

APPLETON, WISCONSIN
subsidiary of Allis-Chalmers Manufacturing Company
West Coast Representative:
E. A. Berry, P.O. Box 958, Longview, Washington
Canadian Representatives:
Pulp and Paper Mill Accessories Ltd., P.O. Box 850
Saint Laurent, Montreal 9, P.Q. Canada

LIGNIN . . . New methods revealed by European scientists

continued from p. 7 . . . fact, only sulfite chemical pulp is made in West Germany, as sulfate is not permitted because of odor, a concession to important tourist trade (big sulfate mills still exist in East Germany).

Dr. Gloz spoke only of the sulfite process, and he said in some cases imprisonment could be the penalty for those who break the rules.

There are 21 sulfite mills in West Germany, of which one-third produce hardwood sulfite. But unfortunately, the hardwood (beechwood) pulps do not fit as easily into utilization schemes as the coniferous woodpulps. The mills produce nearly 700,000 tons of spent liquor solids, but only a fraction is used in other industries. More outside markets must be found and the most promising are fuel briquetting, and agglomeration of ore and blast furnace dust.

Will this approach solve lignin puzzle

Dr. John S. Barton, recently named director of research for Crown Zellerbach Corp., in an article he wrote for PULP & PAPER (April 1959, pg. 61) predicted this industry's lignin riddle may ultimately be solved by an attack which uses selective enzymatic processes.

A leader for years in basic research in this industry, Dr. Barton visualized future lignin depolymerizing plants operating analogous to enzyme conversion of starches.

"A lignin-based chemical industry will then have become a reality," he said.

He cited recent work by F. F. Nord and Walter J. Schubert, reported in *Scientific American* (Oct. 1958) on synthetic and degradative processes for lignin as opening up a new approach—the use of selective enzymatic processes.

Dr. Barton was technical program chairman of the Chicago Round Table, taking over when his colleague, Dr. W. M. Hearon, was stricken seriously ill after recently returning from a European trip.

Ether soluble components of various kinds have been made at The Institute of Paper Chemistry, from the spent sulfite of aspen wood. A thorough report on this was made by Dr. Pearl, and he and his co-authors, D. L. Beyer and O. Justman, were complimented for their work. Peeled quaking aspen (*populus tremuloides*) was cooked in ammonia-base sulfite liquor. The effluent was concentrated and extracted exhaustively with ether, and the extract fractionated by chromatographic and solvent distribution methods. More than a dozen compounds were isolated and identified.

Use of two modern tools at the Finnish Pulp & Paper Institute in Helsinki, enabling the separation and study of certain components of sulfite liquor was described by Dr. Waldemar Jensen, director of the Institute. Co-authors were K. E. Fremer and K. Forss. Dr. Jensen said one of these tools is ion exclusion chromatography and the other is gel filtration. ("Sephadex," a polymeric substance, was used). By these means, the Finnish researchers were able to separate the lignin sulfonates from carbohydrate sulfonates and from lignin-like sulfonates present in the liquor.

This separation can be carried out, based in part on differences in molecular weights which make it possible to separate lignin sulfonate fractions of varying molecular weights.

"A fresh approach to lignin problems and a high class paper" was the way Dr. Lewis described a report by Prof. C. W. Dence, co-authored by Dr. K. V. Sarkanen, of State University College of Forestry, Syracuse, N. Y. They used chlorine dioxide and sodium chlorite for oxidation of lignin model compounds and wood meals.

Two points made by Dr. Dence:

1. In this way it is possible to rupture the aromatic nucleus to form derivatives of the muconic acid methyl ester type. These are aliphatic compounds. Hence, it becomes possible to eliminate the aromatic compounds in the liquor through conversion to aliphatic compounds.

2. The second result of the oxidation is the oxidation of the side-chain forming derived benzoquinones.

A suggestion was made during the discussion of this paper that a further study of this kind of reaction might develop a method for converting the conventional aromatic structure of lignin into reactive aliphatic derivatives, leaving these in the pulp, in part at least.

This would appear to be pure speculation but it was offered as a better way of treating wood than to remove the lignin and some of the carbohydrate materials as is presently done in pulping. There was much interest shown in the relation of these findings to commercial delignification and bleaching processes.

Lignin degradation by heating with alkalis or alkaline reagents was the subject of two other European presentations, one by Dr. Joseph Gierer, co-author with Dr. I. Kinze, both of the Swedish Forest Products Research Laboratory, Stockholm, and the other by Drs. T. Enkvist, J. Turunen and T. Ashorn of the University of Helsinki, Finland. Both were high-class papers in the judgment of Dr. Lewis.

Using modern organic methods, Dr. Gierer showed possible mechanisms for explaining the structural changes

Illustrated address draws most interest

Prof. Holger Erdtman's banquet address at the Fourth Lignin Round Table in Chicago kept the audience on the edge of its seats while he described, in an inimitable manner, the chemical components of the forest and trees. He told how chemical knowledge can be used to classify different species of trees.

Many original slides were shown by his wife, Dr. Gunhild Aulin-Erdtman, also an outstanding lignin chemist in her own right.

The Puget Pulp mill distinguishes the Bellingham skyline.

PUGET PULP *

will strengthen your competitive position

PUGET SOUND PULP & TIMBER CO.
BELLINGHAM • WASHINGTON

* A SOFTWOOD, CHLORINE DIOXIDE BLEACHED SULPHITE PULP

LIGNIN . . . Developments in United States and other countries

which take place in lignin during alkali and sulfate cooking. The main degradation reaction is that involving the alkaline hydrolysis of aryl alkyl ether bonds. The cleavage of these bonds requires the presence of a neighboring hydroxyl group in the propane side-chain.

The findings are easily explained by assuming that the splitting reaction proceeds via an epoxide intermediate. Experimental support for this was provided.

The other paper on demethylation and degradation of lignin or spent liquors by heating with alkaline reagents, presented by Dr. Enkvist, related how his Finnish group heated kraft or sodium base sulfite spent liquors with restricted amounts of sodium sulfide and sodium hydroxide to temperatures of 250 to 285 degrees Cent. Under these conditions, high yields of ether soluble material resulted.

These incude demethylated and reactive phenols such as pyrocatechol, protocatechualdehyde and ecetopyrocatechol in addition to non-volatile and volatile acids, methyl sulfide and methyl percaptan. Dr. Enkvist listed the amounts of acetic and formic acid, methyl sulfide and pyrocatechol, methyl and ethylcatechols and other ether soluble phenols as well as protocatechualdehyde and other similar compounds as well as a demethylated lignin which had phenoformaldehyde type application in high yield.

Kraft lignin problems of filtration, coagulation and precipitation of alkali lignin from black liquor in the case of eucalyptus by J. W. T. Merewether of Ivanhoe, Victoria, Australia, and another on development of useful products by West Virginia Pulp & Paper Co., Charleston, S. C., prepared by P. R. Wiley, were conventional in character. The work in Australia produced lignin salts and the conversion of the salt to lignin also was described.

The largest source of raw lignin in the United States is the 6,500,000 tons produced by the kraft industry, said Mr. Wiley. The West Virginia firm spent $5,000,000 over 20 years to find useful products. After abandoning marketing of raw lignin, it determined two product types are worthwhile—1) using surface active properties of lignin salts for emulsion stabilization, cement and ceramic processing, dye, pigment or insecticide dispersions, and 2) resins or rubber products using a large percentage of lignin.

Lignin for plastics was detailed by Prof. K. Kratzl of the University of Vienna and Austrian Wood Research Institute. Unable to attend, his paper was read by another. A major portion dealt with use of lignin in the phenol resins industry and its reactions with isocyanate.

A new chemical plant started by Crown Zellerbach Corp. at Bogalusa, La., was of considerable interest to delegates, especially those from the chemical industry. Dr. D. W. Goheen presented the paper, with Drs. W. M. Hearon and W. S. MacGregor as co-authors. This plant produces methyl mercaptan and dimethyl sulfide. Yields run at about 2.6% of the kraft black liquor solids. If applied to all kraft production in the United States, about 400,000 tons of sulfur chemicals would be produced annually.

While amounts of these are used directly as gas odorants and in the manufacture of methionine, the greatest interests seem to lie in the production of derivatives of which dimethyl sulfoxide is one of current interest. This is also being manufactured at Bogalusa from dimethyl sulfide. On further oxidation of the dimethyl sulfoxide, dimethyl sulfone is formed. Other possible derivatives were described.

The Marathon lignin products plant at Rothschild, Wis., now a division of American Can Co., has been producing vanillin and dispersing agents for many years. Utilization for dispersion agents was discussed in a paper by Drs. M. A. Baum, E. E. Harris and R. F. Benning.

The Sulphite Pulp Manufacturers' Research League, started years ago by Wisconsin mills and now national in scope, was represented by Dr. J. Benko, who reported on experiences with a new method of determining relative molecular weight of soluble lignin compounds based on diffusion constants. Molecular size of lignosulfanates was correlated with the dispersing effect of kaolin clays.

Phenol and Swedish (volumetric) methods for quantitative determination of reducing bodies in lignosulfates were compared by Dr. J. Giguère of Lignosol Chemicals Ltd., Quebec City, Canada, and found equally good when followed by a same operator. The phenol method is more precise when used by many operators.

Research in Oslo, Norway, by Drs. S. Kolboe and O. Ellefsen showed lignin content of Norwegian spruce is in agreement with ordinarily accepted value, viz. 28%. Some authors had recently suggested there might be less lignin than hitherto believed. They used IR-spectroscopy.

More about lignin by-products of pulp mills, with comments on Crown Z's Bogalusa plant and work at Marathon's Wisconsin plant, etc., will be found in another article in this issue, written by the late industry consultant, A. M. Cadigan, commencing on page 55. ■

. . . INDUSTRY GROWTH, cont.

continued from p. 21 . . . velocity air dryers; two aluminum-bronze alloy dryers which will provide a higher heat transfer than conventional cast iron dryers, says the company; one dryer felt dryer; and a complete new drive consisting of seven Sandy Hill spiral bevel gear units, line shaft and pulleys.

Installation of the surface sizing equipment, which will be in operation before October 1 on its second paper machine, doubles Gould's surface sizing capacity.

Explains Richard A. Premo, assistant to the president, "This installation was necessitated by a growing demand for surface sized papers which we make from our new hardwood pulps."

Albemarle Container moving to new plant

ODENTON, MD.—The Baltimore corrugated shipping containers plant of Albemarle Container Corp., a division of Albemarle Paper Mfg. Co., will be moved to a new building here. It will have about 60,000 sq. ft. of space to start, later may be expanded to 100,000.

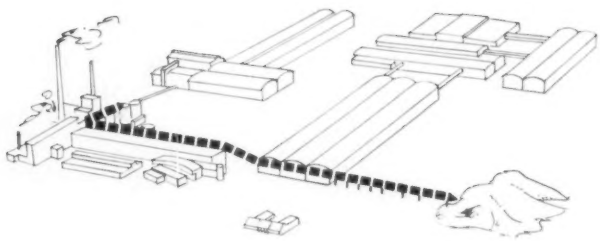
Brunswick moves ahead on expansion program

BRUNSWICK, GA.—Brunswick Pulp & Paper Co. has awarded Stone & Webster Engineering Corp. the principal construction contract for its $35 million expansion program. Total production of the expanded facilities, scheduled for completion in early 1963, will be approximately 1,120 tons of pulp/day. Work on the 550-tpd bleached kraft mill includes new power and recovery boilers, wood and chip handling, equipment for bleaching, washing and screening.

The HUYCK 4-D treatment is specified by more than 60% of our customers!

Ask your HUYCK MAN!

Rader system moves 120 tons of chips per hour over 1500-ft. line for Weyerhaeuser



Chip storage silos at Weyerhaeuser Company's pulp mill at Springfield, Oregon, are on the opposite side of the mill site from the open storage and car unloading location. There are several intervening roadways as well as the huge paper machine building itself.

Yet Rader's big 18-inch pneumatic pipe, served by a blower and feeder at the unloading area, carries chips over the roadways, along the top of the paper machine building, and across to the silos at a continuous rate of 120 tons per hour. This single pipe traverses 1500 feet through 360 degrees of bends and a 100-foot rise.

A valve at the trackside end of the line can divert chips into the pulp mill line, or into two lines which feed the chip storage pile in an open field across the railroad tracks. Chips are reclaimed by bulldozer to the rail unloading pit, and back to the Rader system to be conveyed to the mill.

Installed in 1958, the Rader system has enabled Weyerhaeuser to unload chips at any time, and keep an even supply moving into the silos at the mill.

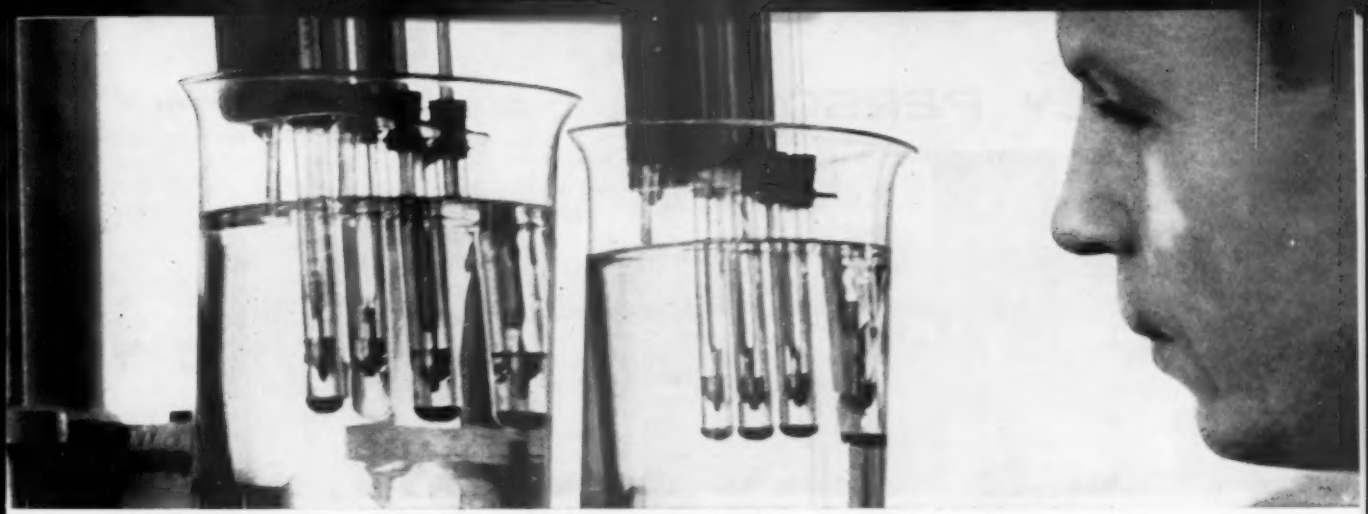
Rader engineers know how to design chip-handling systems for maximum flexibility and volume, coupled with great economy. Write or phone for information.

High Pressure Pneumatic Conveying Equipment

RADER PNEUMATICS

1739 N. E. 42nd Ave. • Portland 13, Oregon

BOSTON EUREKA, CALIF. LOCKPORT, ILL. LOS ANGELES
MEMPHIS SYRACUSE VANCOUVER, B.C. PEMBROKE, ONT.



Dropping point test shows how greases react to heat. Beaker fluid has been heated to 390°F. All greases tested except Darina (second tube from left) have passed from solid to liquid state.

BULLETIN:

Shell reveals the remarkable new component in Darina Grease that helps it save up to 35% on grease and labor costs

Darina® Grease is made with Microgel*, the new thickening agent developed by Shell Research.

Darina lubricates effectively at temperatures 100° hotter than most conventional soap base greases can withstand.

Read how this new multi-purpose industrial grease can help solve your lubricating problems and even save you up to 35% on grease and labor costs.

THERE IS no soap in Darina Grease. No soap to melt away—wash away—or dissolve away.

Instead of soap, Darina uses Microgel—a grease component developed by Shell Research.

What Microgel does

Because of Microgel, Darina has no melting point. It won't run out of gears or bearings.

Compared with most conventional soap-base greases, Darina provides significantly greater protection under adverse service conditions.

Mix water into Darina and the grease does not soften. It shrugs off water—won't emulsify.

Resists heat

Darina will withstand operating temperatures 100° hotter than most conventional multi-purpose greases. It cuts leakage and reduces the need for special high-temperature greases.

Also, Darina resists slumping, thus forming a more effective seal against foreign matter.

Saves money

Shell Darina can reduce maintenance expenses while it protects your machinery. Savings of up to 35% on grease and labor are quite possible.

In some cases lubrication intervals have been extended to double what they were before. Less grease is consumed and less time consumed applying it.

For details, see your Shell Representative. Or write: Shell Oil Company, 50 West 50th Street, New York 20, New York.

*Registered Trademark

SHELL

A BULLETIN FROM SHELL
—where 1,997 scientists are helping to provide better products for industry

STRICTLY PERSONAL . . .

starts on page 27

John W. Gilbert Jr., formerly director of research for International at Mobile, has been named assist. director of research for Southern Kraft div., International Paper Co. in New York City.

Donald O. Sensenbach has been appointed gen. mgr., engineering and machine div., St. Regis Paper Co. Formerly assistant to the vice pres. of that division, Mr. Sensenbach replaces **R. McKim Browning.**

Morris E. Lasker has been elected to the board of directors, Chase Bag Co. He succeeds **Ludlow S. Fowler** who died April 12. Mr. Lasker, partner in a New York City law firm, also will serve as legal counsel for Chase

New England Section TAPPI has elected the following officers: **John W. Wendell Jr.,** Tileston Hollingsworth Co., chairman; **Philip Slayton,** Monsanto, treasurer; **Thomas C. Morganstern,** Minerals and Chemicals Philipp Co., secretary.

Berkshire District: **Milton J. Gordon,** P. J. Schweitzer Co., chairman; **William A. Hosmer,** Hurlbut Paper Co., vice chairman; **Arthur W. Pinkham Jr.,** Curtis Wright Corp., treasurer; **Robert M. Henderson,** E. D. Jones Corp., secretary.

Pioneer District: **Alexander E. Hutton Jr.,** Fitchburg Paper Co., chairman; **David Habib,** Technifax Corp., vice chairman; **William F. Nye Jr.,** The Hubinger Co., treasurer; **Clifford S. Reppe,** Hercules Powder Co., secretary.

Bay District: **Albert C. Lamoreaux,** Dennison Mfg. Co., chairman; **David W. Lovering,** Arthur D. Little, Inc., vice chairman; **William P. Stillman,** Bird & Son, treasurer; **Paul Crane,** Oxford Paper Co., secretary.

Maine-New Hampshire Section: **Whitney Osgood,** S. D. Warren Co., chairman; **Lawrence R. Adkins,** Waterfalls Tissue Corp., vice chairman; **Donald Bail,** Great Northern Paper Co., secretary-treasurer.

Executive Committee (three years): **H. E. Pratt,** Pejepscot Paper Co., **John C. Cousins,** Penobscot Paper Co., **Clayton T. Backus,** University of Maine, **Malcolm C. White,** Oxford Paper Co. Elected for one year: **Edward N. Poor,** Hudson Pulp & Paper Co., and **Paul J. Shirley,** Penick & Ford Co.

James B. Malloy has been appointed resident mgr., International Paper Co.'s container division plant near Pittsburgh, Pa. Formerly, he was sales mgr. of the division's Whippany, N.J. plant.

Harold J. Burke, account executive, printing paper division, St. Regis Paper Co., died Aug. 20 at his Westport, Conn. home. He was 50, and had been with St. Regis since 1950. Prior to that, he was with Walker Goulard Plehn Co., Inc.

Richard W. Simmons and **Frank Webster** have been named pulp, board and paper regional sales managers for the Demopolis, Ala. plant, Gulf States Paper Corp. Mr. Simmons will cover New Jersey, Pennsylvania, and southern North Carolina. Mr. Webster will be responsible for New York State and New England.

Robert B. Holder has been appointed director of administrative services, American Forest Products Industries, Washington, D.C.

Michael A. Poler, formerly mgr. techncial assistant in sales, is now in domestic sales, Rayonier Inc., New York.

Gibson P. Stouck, mgr., Lock Haven division, New York and Pennsylvania Co., Inc., has been elected president of the West Branch Manufacturers' Assn. . . . **Burton C. Berg,** vice president, Mead Papers Inc., will transfer to the New York sales office, effective Sept. 15. He was at the company's Dayton offices.

George J. Motz has been promoted to assist. mgr., New York-Philadelphia sales district, Becco Chemical division, FMC Corp.

Midwest

U. G. Stoeffler now is process development mgr., and **John D. Nisbet** is gen. sales mgr., Allied Paper Corp. Both were assistants to the post now held. . . . **Dr. R. A. Diehm,** professor of paper technology, Western Michigan University, has been named a consultant to the U. S. Dept. of Interior. Dr. Diehm's principal assignment will be a wood utilization project.

John P. Anderson has been promoted to sales mgr., Coshocton, Ohio containerboard mill, Stone Container Corp., Chicago. He had been supt. at the plant.

Harold S. Vanderhei, formerly vice president and gen. mgr., The D. M. Bare Paper Co., has been elected to the company's board of directors and promoted to executive vice president.

Frederick M. Spaugh has been appointed product planner, Henry Pratt Co., Chicago. Mr. Spaugh was previously with the General Electric Co. . . . **Everett O. Jones** is now gen. mgr., corrugated shipping container plant, Container Corp. of America. He was with the Mengel Co. when it became a CCA division in 1960. . . .

Casson

Anderson

Stone Container has made three management appointments; **Truman N. Casson** is plant supt., **Ivan L. Anderson,** maintenance supt., and **Nicholas R. Repke,** administrative asst. to the gen. mgr.

Repke

Herbert A. Smith, technical director, The Mead Corp's Chillicothe division, has been appointed gen. chairman, testing division, TAPPI by President **Harold M. Annis,** Oxford Paper Co. Mr. Smith is a past chairman of TAPPI's Ohio section.

EIMCO-PROCESS Reactor-Clarifier Unit

MAKING RIVER WATER FIT FOR PROCESS USE

In a recent expansion, Fibreboard Paper Products Corporation added this modern Eimco-Process High Rate Reactor-Clarifier to the water treatment facilities at its San Joaquin pulp and board mill at Antioch, California.

The treatment unit, an upflow solids contact type, removes color and reduces turbidity of Sacramento River water from 40-400 ppm to an average 4 to 10 ppm clarity. 1800 gpm of a 3000 gpm flow is sent directly to the plant for process use.

The Bechtel Corporation, San Francisco, designed the treatment plant to provide all these cost-reducing advantages:

- **Low Maintenance — Unit has automatic chemical feed, level control and sludge withdrawal.**
- **Low Water Loss — Sludge raked to a collection pocket located outside the turbulent zone results in the formation of a heavy sludge.**
- **Low Chemical Requirement — Alum, 30 ppm; Activated silica, 5 ppm; Chlorine, 2 ppm.**
- **Low Tank Cost — A high overflow rate of 1.25 gpm/sq. ft. and short detention period of 90 to 110 minutes, makes possible a 57-ft. diameter by 17½-ft. tank for a 3000 gpm flow.**

Your nearby Eimco-Process representative will be glad to help you and your engineers find opportunities for reducing your treatment costs. Call him.

Write Eimco's Process Engineers Division for new 24-page Bulletin SM-1006, a valuable reference on Reactor-Clarifier treatment units.

Reactor-Clarifier is a trademark of the Eimco Corporation.

THE EIMCO CORPORATION

B-739

Process Engineers Division
420 Peninsular Avenue,
San Mateo, California

STRICTLY PERSONAL . . .

Edwin M. West, general attorney Marathon div., American Can Co., and secretary of the company, has resigned effective Aug. 31. He will go to Schlumberger Ltd., Houston, Tex. as general counsel and secretary.

Dr. Charles C. Walton now is vice president of research, Minnesota Mining and Mfg. Co. He succeeds **Dr. Carl Barnes.** Dr. Walton formerly was vice president and general mgr. of the company's adhesives, coatings and scalers div.

Pacific

Edgar G. Putnam, founder and original director of Fiber Research, Seattle, Wash. died June 24. He had been associated with pulp-paper industry in the Pacific Northwest for many years.

John A. Ream, 72, long-time Crown Zellerbach Corp. employe, died Aug. 1 at his Willamette, Ore. home. He was personnel and safety supervisor of Crown's West Linn Div. for many years, later became retirement plan field representative in Portland office before retiring in 1954 with 40 yrs. service.

Dean E. McCrory has been appointed assist. dist. sales mgr., Tacoma, Wash. for Pennsalt Chemicals Corp., replacing **Ralph C. Schaeffer,** now Salt Lake City dist. sales mgr.

Folkestad

Cofield

Boise Cascade Kraft Corp., Wallula, Wash. promotes **Elmer W. Folkestad,** mgr. of purchasing & traffic since '48, to production mgr.; **K. C. Cofield** joins staff as production scheduler.

Canada

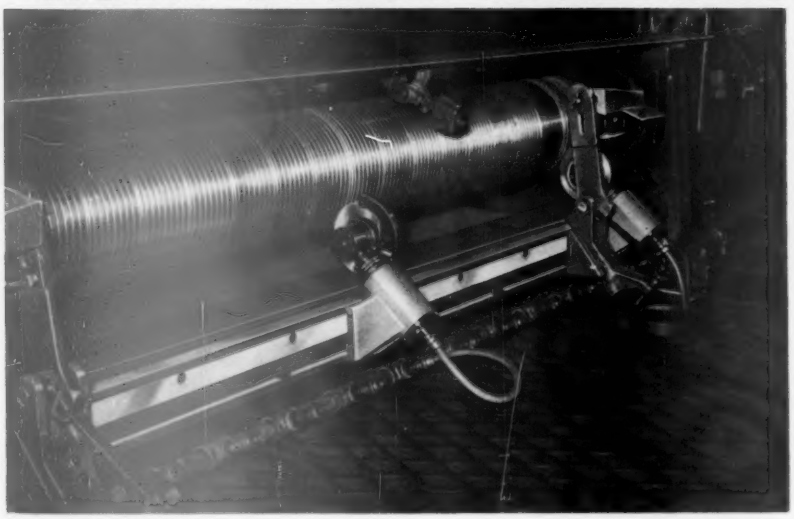
Harold S. Foley, formerly vice chairman, MacMillan, Bloedel & Powell River, Ltd., Vancouver, has been elected a director of Union Oil Co. of Canada. . . . **Lionel C. Mohr** has been appointed mgr., consumer products, the E. B. Eddy Co., Hull, Que. . . . **Robert E. Morrow,** Montreal, and **T. M. Hopkins,** Grand Falls, Nfd., have been elected directors of Gaspesia Sulphite Co., Chandler, Que.

Several appointments have been made by **Carl M. Fellows,** group vice pres. Dominion Tar & Chemical in charge of newsprint and containerboard as a result of the recent integration of Dominion Tar, Howard Smith Paper Mills, St. Lawrence Corp. and Hinde & Dauch. Here are the new top group executives: **J. W. Fries,** vice pres., woodlands; **W. T. Pound,** vice pres., manufacturing; **R. M. Millogan,** gen. sales mgr.; **M. A. Campbell,** mgr., containerboard sales; **J. G. Dodd,** controller; **C. F. Browning,** mgr., traffic.

Lars Olsson has been appointed mgr., B.C. sales for SF Products, Canada, succeeding **Uno Holmberg,** now pres. S.F. Australia Pty.

Leon Koerner, who headed Alaska Pine & Cellulose prior to its sale to Rayonier Canada, Ltd., has presented a further $400,000 to the U. of British Columbia to finance a graduate studies' building adjacent to the faculty club

JAGENBERG
"MULTI-SHEAR" SLITTERS



"MULTI-SHEAR" Slitting Unit in a popular score-cut winder

- READILY INSTALLED IN MANY SCORE-CUT WINDERS
- SUITABLE FOR NEARLY ALL GRADES OF PAPER AND BOARD
- PROVEN IN HUNDREDS OF WINDERS

Many types of score-cut winders can be converted to shear cut without extensive rebuilding by installation of a JAGENBERG "MULTI-SHEAR" slitting unit. Operators appreciate the greatly reduced set-up time of JAGENBERG "MULTI-SHEAR" slitters as compared with conventional shear cut systems.

When changing a winder from score cut to shear cut we replace the platen roll with a patented air-clamp slitter shaft. This shaft carries a large number of glass-hard steel bushings each of which has eight cut grooves to serve as bottom slitters. No tools are required to position the cut where it is needed. The run of the paper web is the same as for score cut.

Manual or pneumatic top slitters for the "MULTI-SHEAR" system are mounted on existing top slitter bars.

For full details of the "MULTI-SHEAR" slitting system contact

JAGENBERG USA, INC., 300 Park Avenue South, New York 10, N. Y.

In Canada: **JAGENBERG OF CANADA LTD.,** 209 Davenport Rd., Toronto 5, Ont., Canada

Mathieson takes costs out of caustic deliveries

A major cause of high shipping costs is the distance between your plant and your supplier. When your caustic soda is marked Mathieson, you can count on fast, economical delivery from one of eight producing plants and shipping points (with a ninth under construction) covering the industrial East.

Other ways Mathieson lowers delivery costs? Only Mathieson ships 73% caustic by truck for fewer trips, less weight on shorter hauls. Only Mathieson schedules truck shipments so you get caustic when you need it.

And, of course, Mathieson service backs every order with technical assistance—on the spot or in our laboratories. Call or write OLIN MATHIESON, Baltimore 3, Md.

Ammonia • Carbon Dioxide • Caustic Soda • Chlorine • Hydrazine and Derivatives • Hypochlorite Products • Methanol • Muriatic Acid • Nitric Acid • Soda Ash • Sodium Bicarbonate• Sodium Chlorate • Sodium Chlorite Products • Sodium Methylate • Sodium Nitrate • Sulfur (Processed) • Sulfuric Acid • Urea 8957

CHEMICALS DIVISION Olin

STRICTLY PERSONAL . . .

which he also financed. Mr. Koerner, now living in Palm Springs, Calif., also made a grant of $1,000,000 to the university for scholarships.

Dr. Alfred J. Corey, chief chemist, Fraser Cos. Ltd., Edmundston, N.B., was recently presented with a gold watch in recognition of his 25 years' service with the company. The presentation was made by Pres. **Aubrey Crabtree.**

R. J. Askin, for many years an executive with Abitibi Power & Paper Co., latterly as vice pres., development, engineering and services, died recently in Royal Victoria Hospital, Montreal. He entered the industry after graduation from Queen's U. to join the engineering department of the old Fort William Paper Co., being resident mgr. there when Abitibi acquired the operation. He played an important part in Abitibi's expansion since the mid 40's.

Dr. Otto Maass, research associate at McGill University and for many years with the Pulp & Paper Research Institute, a leader in pulp and paper experimental work, died recently in Montreal, aged 71. He was an honorary life member of the CPPA technical section and had been honored many times by the industry and scientific organizations.

Lowell Besley, woodlands dept. chairman, Pulp and Paper Research Institute of Canada, is president, Canadian Institute of Forestry; **George S. Allen,** dean of forestry, U. of B.C., is vice pres.

George Henderson, former vice pres. and comptroller, Consolidated Paper Corp., died recently at his home in Pointe Claire, Que., aged 80. He entered the paper industry in 1918 with the old Wayagamack Pulp & Paper Corp. He retired from Consolidated in 1958.

Jean L. Chollet, formerly in charge of pulp research, Anglo Paper Products, Ltd., Quebec City, Quebec, Canada, has joined the research group of Albert E. Reed & Co. Ltd., in Maidstone, Kent, England.

E. L. (Bill) Harrison has been appointed exec. assistant to **J. V. Clyne,** chairman of the board, MacMillan, Bloedel & Powell River, Ltd. He was formerly vice pres., industrial relations, British Columbia Packers. He is president of the Vancouver, B.C., Board of Trade.

C. M. Fellows, St. Lawrence; **H. E. Mason,** Howard Smith, and **W. H. Palm,** Hinde & Dauch, head up the newsprint-container, kraft-five paper and packaging, converted-products groups, respectively.

A. H. Harper is now mgr., Atholville pulp mill, Fraser Cos.

A. H. Williamson, only recently elected a director of MacMillan, Bloedel & Powell River following resignation of **Harold S. Foley** and others, died suddenly in Vancouver, B.C. He had been a prominent figure in Western Canadian financing for many years.

W. R. Aird has been named comptroller of the Pulp & Paper Institute of Canada, Montreal, according to announcement of Pres. Lincoln Thiesmeyer.

Anthony A. Yankowski, formerly of Kimberly-Clark Corp., has been appointed mill mgr., Irving Pulp & Paper's Lancaster, N. B. mill, replacing **J. C. Wig,** now with Kimberly-Clark at Neenah, Wis.

Alex G. Rankin, vice pres. British Columbia Forest Products, Ltd., Vancouver, has been elected president of the Vancouver Control of Controllers Institute of America.

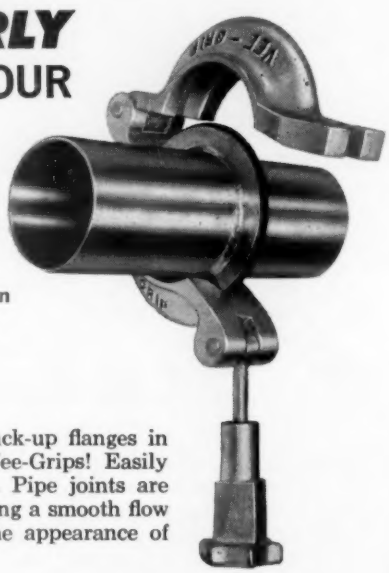
E. H. Lougheed, formerly manager of Abitibi Power & Paper Co.'s mill at Sault Ste. Marie, Ont., has been transferred to Toronto head office as asst. to the vp of mfg. . . . **Dr. Allan Paull,** formerly an Abitibi statistician at Toronto, has joined Kimberly-Clark, Neenah, Wis. . . . **Alan B. Cook,** new gen. sales mgr., and member of the board of Abitibi Corp., Detroit, was a vp and dir. of Grand Rapids Gypsum Co.

South

Dr. Hermann G. Weiss has joined West Virginia Pulp and Paper Co. as a research engineer at its Covington laboratory. Initially, he will study paper and paperboard drying processes.

Gordon H. H. Leonard joins West Virginia Pulp and Paper as a research engineer at Covington. He will study papermaking instrumentation and controls. . . .

INSTALL **OVERLY** VEE-GRIPS IN YOUR STOCK LINES



- A tight seal in seconds.
- Pipe is held in perfect alignment.
- Weigh less and cost no more than ordinary back-up flanges.
- Available for 3", 4", 6", 8" and 10" tube and pipe.

Save time! Replace ordinary back-up flanges in your stock lines with Overly Vee-Grips! Easily put on or taken off in seconds. Pipe joints are held in perfect alignment, assuring a smooth flow of stock. They also improve the appearance of your stock line installations.

Write for catalog and prices

Serving the paper industry in custom metal fabrication of engineered air systems — machine hoods — Gardner Dryers—Westinghouse Sturdevant fans and steam coils — stock pipe — distributor rolls — suction boxes — white-water pans — head boxes — tanks.

OVERLY'S INCORPORATED

Box 468 Neenah Wisconsin

William Hubert Stephenson, formerly an electrical engineer with Booth-Jones and Assoc., consultant, Raleigh, N. C., is now with Halifax Paper Co., Inc., Roanoke Rapids, N.C.

Guthrie S. Mabrey has been promoted to director of research, Southern Kraft division, International Paper Co., Mobile, Ala. He became asst. dir. of research in 1946.

G. William Colvin has been appointed gen. mgr., southeastern division, corrugated shipping container plants, Container Corp. of America. He will direct plants in several southern states from offices in Winston-Salem . . . CCA also has appointed **Albert L. Ahlers** gen. mgr., central-east division, corrugated shipping container plants. He will locate at the company's Louisville offices.

Carle Arne Olsson, director and vice president and gen. woodlands mgr., The Chesapeake Corp. of Virginia, West Point, Va., died recently.

John R. Hanzlik, formerly asst. chief engineer, The Manchester Machine Co., now is mgr., sales service. The post was created under a recent sales expansion program.

Suppliers

Dewitt G. Mitchell has been appointed sales mgr., machine knife division, Simonds Worden White Co., Dayton, Ohio. He had been a district sales mgr. in the knife division.

Lyle T. Hanse, Dave Van de Roovaart and **Lynn E. Schade** have new posts with Link-Belt Speeder Corp. Mr. Hanse is asst. sales mgr., Mr. Van de Roovaart, credit and collections field mgr., and Mr. Schade, European sales development representative.

H. K. Ferguson Co., Cleveland, Ohio, has elected six men to new management posts: **James N. Barnes,** previously project mgr. and construction mgr. is vice president. **Gordon W. Wagner,** formerly gen. construction mgr., is vice president, construction; **Raymond B. Aufmuth,** chief engineer and company director, is vice

Handles 70,000 cords per year at this major Southern mill

In an average day, 60 to 70 trucks of pine pulpwood are brought into this large Alabama paper mill. All of this softwood is unloaded by the 700 Series AMERICAN above. Using rope sling with automatic tripping device, this crane unloads 3-to-4-cord trucks in a matter of minutes. In all, this one machine handles more than 70,000 cords per year . . . with capacity to spare for peak loads and increased production requirements. It's another example of leading mills that are profiting from AMERICAN's steady, dependable output.

Your AMERICAN representative will be glad to stop in and talk over your present or future pulpwood handling plans. He's the one man who can give you *unbiased* recommendations on *all* types of crane equipment for your yard — on crawlers, rubber, rails, or special mounts. CC-733

AMERICAN

AMERICAN HOIST and DERRICK COMPANY
ST. PAUL 7, MINNESOTA

CRAWLER CRANES | RUBBER-MOUNTED CRANES | LOCOMOTIVE CRANES

STRICTLY PERSONAL . . .

president, engineering; **William G. Cronk,** formerly director of research and development, is eastern district mgr.; **Alfred H. Gerber,** previously chief estimator, is mgr., overseas operations; **Stanley J. Jasbeck,** formerly asst. chief estimator, chief estimator.

Henry A. "Hank" Gallon, formerly with Fitchburg Paper Co., has joined Fleetwood Chemical Co. as New York State representative.

James W. Ferguson has been named gen. trade salesman, corn refining division, Penick & Ford, Ltd., Inc. . . . **Andrew T. Muha** has joined the packaging division, Olin Mathieson Chemical Corp. He will be Midwest sales rep. for Fourdrinier kraft roll stock in the division's forest products operations.

Appleton Woolen Mills, operated under that name since 1881, has changed its name to **Appleton Mills.** Reason given is the diversified manufacture of industrial fabrics by the company, not only woolen goods, more accurately reflected in the new name.

Norman Block has been appointed director of engineering and research, Western Precipitation division, Joy Mfg. Co., Los Angeles. He had been with Foster Wheeler Corp., N.Y. . . . **Robert P. Jones,** formerly New England division mgr., Oakite Products, Inc., has been assigned to the company's New York offices.

Thomas M. Goike has been named chief engineer, General Kinetics Corp., Englewood, N.J. He was with the company's sales engineering dept.

Joseph A. Paciello now is mgr., paper and leather division, Berkshire Color & Chemical Co., Reading, Pa. During 1959-60, Mr. Paciello was affiliate chairman of PIMA.

Jack M. Blalock has been named mgr., heavy chemical sales, general chemical division, Allied Chemical. He had been mgr. of market surveys for the past two years.

Maurice S. Letourneau now is gen. mgr., chemicals dept., Wica Chemicals Inc., Charlotte, N. C. His activities will include sales of paper coatings and sizes.

Samuel M. Langston Co. moves Greenwood printer-slotters from Baltimore, Md. to Camden, N. J. and transfers the following management: **Sam H. Greenwood,** sales-mgr., printer-slotters; **Dave Ward,** asst. chief engineer; **William C. Staley,** development engineering supervisor; and **T. L. German,** asst. service supervisor.

Hans Seifert, formerly technical sales rep., Sandoz, Inc., N.Y., has been named sales mgr. of the company's chemical division.

Huyck Felt Co.'s Aliceville, Ala. plant recently marked its fifth anniversary. In what the company referred to as a return to "hard cash" payroll for the anniversary week was made with fifteen thousand silver dollars.

Apologies . . .

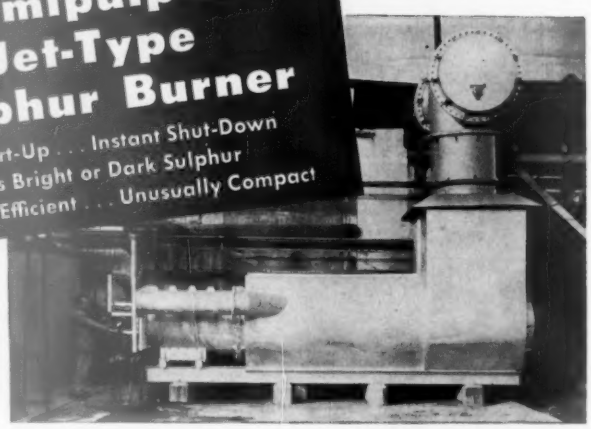
Casey

Krohn

If **Robert B. Casey** and **Donald J. Krohn** of Nekoosa-Edwards Paper Co. look different in this issue of PULP & PAPER, it is because Mr. Krohn is not called Mr. Casey and vice versa. We are sorry the names were switched in the August 21 issue.

Chemipulp-KC Jet-Type Sulphur Burner

- Fast Start-Up . . . Instant Shut-Down
- Handles Bright or Dark Sulphur
- Highly Efficient . . . Unusually Compact



30-ton installation, Rayonier Canada Limited, Port Alice, B. C.

In the Chemipulp-KC Burner, molten sulphur is sprayed into the burner as a fine mist; heated secondary air is then introduced in several stages, resulting in clean, efficient burning. The burner quickly reaches its operating temperature of about 2400°F., minimizing production of SO_3. Operates efficiently at all SO_2 concentrations between 12% and 18½%. At 2100°F, bitumen in dark sulphur is completely burned.

Available in a range of sizes up to 50 tons of sulphur per day and each size will produce SO_2 gas efficiently through a wide operating range. Compact design and flexibility of layout permit installation in limited space.

Write for Bulletin 100

Chemipulp Process Inc. Woolworth Building, Watertown, N.Y.
Associated with Chemipulp Process Ltd., 253 Ontario St., Kingston, Ontario
Pacific Coast: A. H. Lundberg, Inc., P. O. Box 186, Mercer Island, Wash.
Lundberg-Ahlen Equipment Ltd., 779 W. Broadway, Vancouver 10, B. C.

. . . LITERATURE

Chlorine dioxide generation
from glassed-steel equipment is described. Chemical and economical characteristics which suit the company's product, Glasteel, for chlorine dioxide are detailed. Installation photos are provided on a fold-out flow chart to give realistic size picture of unit. Ask for Bulletin 1011, The Pfaudler Co., 1133 West Ave., Rochester, N.Y.

Packaging terms glossary
now is available in third edition. The 172-page work is a joint effort of the U.S. government and private industry, through the Packaging Institute, Inc. The glossary is free to institute members, or $3.50 to others. Packaging Institute, Inc., 342 Madison Ave., New York 17, N.Y.

Bleaching instrumentation
is suggested for a typical three-stage process. A three-page fold-out illustrates bleach plant flow, and points at which instruments described fit into the process. Write Fischer & Porter Co., 945 Jacksonville Rd., Warminster, Pa.

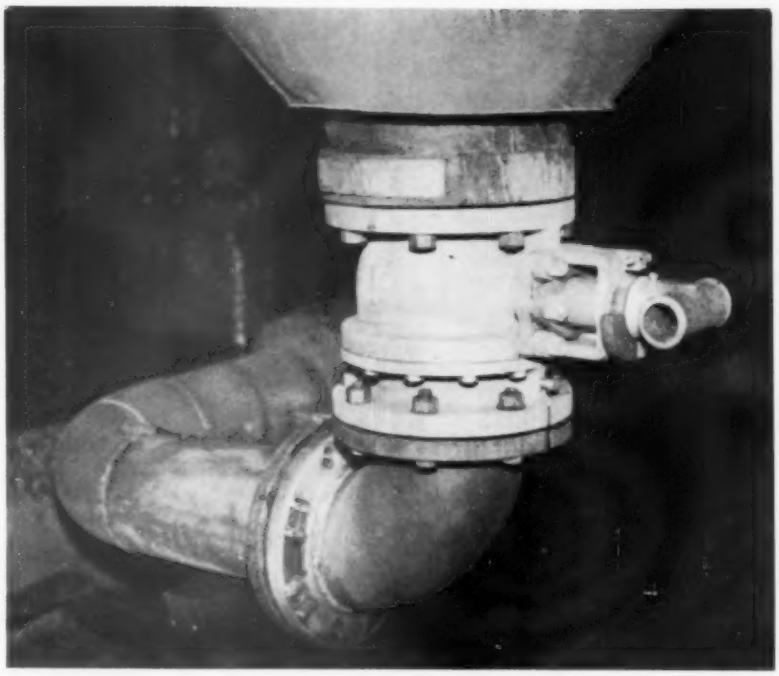
Logging rigging
bulletin for high-lead and tractor operations includes ferrules, hooks, mainline rigging, pans, shackles, sockets and tag chains. Catalogs also have on land clearing blade, log grapples, and a 500-ton swage press. Write to ESCO Corp., 2141 N. W. 25th Ave., Portland 10, Ore.

Pressurized refiner,
of 20 in., 250 hp design for small tonnage applications, is described in Bulletin 212-B. Write Sprout, Waldron & Co., Inc., 130 Logan St., Muncy, Pa.

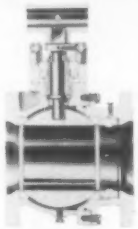
New boiler
in the VU series is completely self-cased and all-welded. Its finned furnace and boiler tubes are suitable for pressurized or induced draft firing. Other specifications are shown in brochure, "The New C-E Modular VU-60 Boiler," provided by Combustion Engineering, Inc., 200 Madison Ave., New York 16, N.Y.

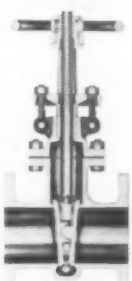
Instrumentation symbols
used by process engineers for process flow sheets are available in a four page reference bulletin. Most symbols follow outline of the Instrument Society of America. Write Fischer & Porter Co., 946 Jacksonville Rd., Warminster, Pa.

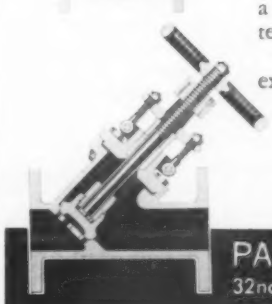
Epoxy resin pipes,
glass fiber reinforced, and developed to handle special pressure and corrosion problems are described in three colorful new booklets. Applications, physical properties, and detailed technical data are shown. Write Fibercast Co., Box 727, Sands Springs, (Tulsa), Oklahoma.



PACIFIC BALL VALVES
installed on rotary digesters...







The Ball Valve shown above was installed at the Crown Zellerbach Kraft Pulp Mill in St. Helens, Oregon, on a rotary digester as a blow down valve. Satisfactory performance is being experienced in this corrosive service under cooking conditions of 350°f., 120 to 125 p.s.i. The body material of the valve was a controlled, enriched alloy, especially compounded for the paper and pulp industry; the seal material was Kel-F.

PACIFIC Ball Valves are well suited for handled abrasive slurries or suspended semi-solids because of their straight-thru, round, flow pattern—with seals protected from the flow. The quick-quarter turn action lends itself to economical pneumatic valve actuators. PACIFIC offers the widest range of **standard** body and seal materials...materials to cope with nearly every corrosive problem.

PACIFIC standard line of *corrosive resistant* valves are widely accepted in the paper industry. Two very popular models are shown at the left: Fig. No. 8550, a split-wedge gate valve, and Fig No. 700Y, a "Y" patterned globe valve.

Why not take advantage of PACIFIC's broad valve experience in the paper and pulp industry?

Write today for a sales representative or PACIFIC's Corrosion Resistant Valve Catalog SS-102 and PACIFIC's new Ball Valve Catalog BV-60.

PACIFIC VALVES, INC.
32nd and Walnut, Long Beach 7, Calif.

Proved Performers IN WOOD CHIP HANDLING...

SUTORBILT BLOWERS SERIES 3200

Designed for 800 to 23,000 cfm at pressures from 2 to 12 psig, Series 3200 Sutorbilt lobe-type positive pressure blowers are thoroughly proved in heavy-duty chip-handling applications. They are available with timing gear diameters from 10″ through 26″ in horizontal designs. Many sizes also offered with vertical case arrangements.

Check these important features of Series 3200 design:

- distortion-free construction at maximum operating pressure
- one-piece 4140 forged steel shaft slip fitted through impellers attached at rear end, allowing increased pressure and horsepower rating
- increased pressure and horsepower ratings . . . with safety
- oversize heavy-duty anti-friction roller bearings
- accurate phasing assured by alloy steel helical timing gears
- impellers internally ribbed for high strength and stability
- machined sub-bases furnished as standard equipment with all units
- force feed pressure system lubricates timing gears and bearings

Write today for Bulletin S-32-A. Department G.

Sales representatives in principal cities

4462 S-33

SUTORBILT CORPORATION

IS WELL BUILT

2966 EAST VICTORIA ST. • COMPTON, CALIF.
Subsidiary of Fuller Company • Catasauqua, Pa.

NEW EQUIPMENT . . .

cont. from p. 23 . . . closed by Dr. Fred H. Frost, director of research at the 12th TAPPI Coating Conference in May, Airevac has been so successful at S. D. Warren that the company has licensed The Black-Clawson Co. to manufacture it. The unit is also expected to reduce defoamer requirements, reduce apparent viscosity by removing air from the coating and maintain a better rheological condition in the coating.

Airevac is said to be readily adaptable to any coating installation and being portable can be moved from one machine to another with ease. Several units are available on a rental basis.

Supplier: **The Black-Clawson Co., Dilts Div., Fulton, N.Y.**

Centrifugal screen

. . . for hot stock refining

Applications: Although designed specifically for automated hot stock screening ahead of brown stock washers, screen is also being used on washed pulp with pronounced savings, says the manufacturer, in defoaming agent costs.

Features: Improved completely sealed centrifugal screen is available in fabricated steel or stainless construction. Of functional design, the all-welded housing uses dished heads to withstand operating vacuums or abnormal internal pressures up to 50 psi.

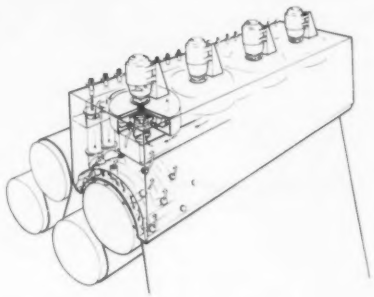
The unit uses self-induced differential pressure to fully control itself on variations of volume throughput, feed consistency and pulp screening characteristics. This internal pressure differential also effectively aids plate cleaning action produced by the patented rotor.

Sectional screen plates may be quickly changed through the side cover which features a special "no-bolt" fastening and sealing arrangement.

Supplier: **Sales Engineering Dept. Improved Machinery Inc., Box 503, Nashua, N.H.**

Air Dryer

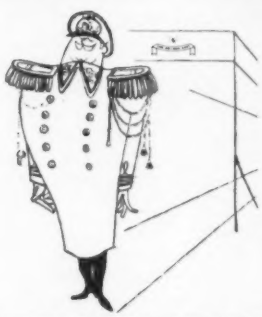
. . . lessens external ductwork



Applications: For drying paper.

Features: New dryer uses principle of internal air circulation to provide for a compact installation on either new or old paper machines with a minimum of area.

High velocity air impingement is effected through built-in centrifugal fans, while a small amount of preheated make-up is introduced through dampened orifices. By changing ratio between hot make-up and recirculating air, the drying air temperature



INTRODUCING THE NEW

DRYDEN-EAST HOTEL

39th St., East of Lexington Ave.

NEW YORK

Salon-size rooms • Terraces • New appointments, newly decorated • New 21″ color TV • FM radio • New controlled air conditioning • New extension phones in bathroom • New private cocktail bar • Choice East Side, midtown area • A new concept of service. Prompt, pleasant, unobtrusive.

Single $15 to $22 Suites to $60
Special rates by the month or lease

Robert Sarason, General Manager

ORegon 9-3900
Teletype NY 1-4295

You can even read this scale around corners—up to 100 ft. away!

only Martin-Decker has this Eye-Level Remote Indicating Crane Scale!

Minimum headroom requirement gives you more stacking space • Full 360° dial makes indicator easier to read, more accurate • Exclusive sensater-type load cell eliminates surface friction • Full tare adjustment to manually zero out boxes, baskets, hooks, etc. • High safety factor—ultimate strength more than 5 times rated capacity. Dial crystal is shatter resistant optic plastic • All scales available in metric calibrations.

Write for Technical Brochure T189

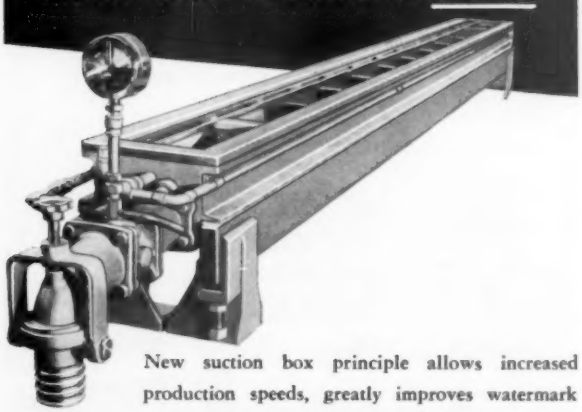
The standard Martin-Decker Sensater Crane Scale has all of the precision features of the remote model.

MARTIN DECKER

Precision Pressure Instruments Testing—Weighing—Load and Force Measurement

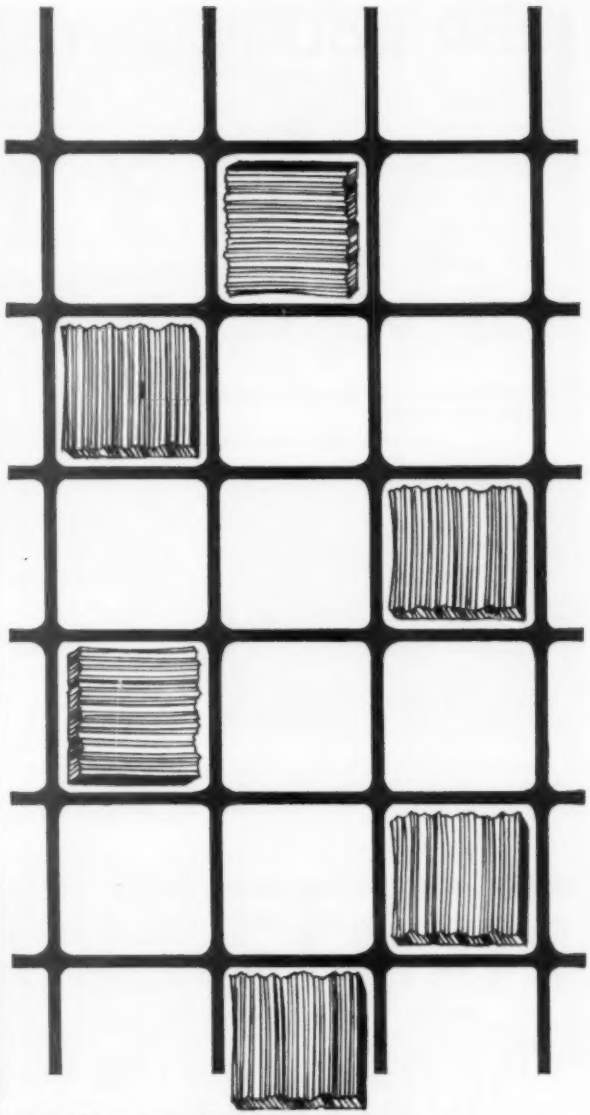
MARTIN-DECKER CORPORATION • 3431 Cherry Ave., Long Beach 7, Calif.

New Dandy Roll Suction Box Makes Good Watermarks BETTER

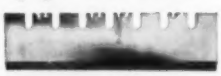


New suction box principle allows increased production speeds, greatly improves watermark clarity. Prevents picking and porosity in the making of thin and superfine papers. Better quality and finish assured. Write for descriptive literature.

THE SINCLAIR COMPANY
62 APPLETON STREET • JEfferson 2-9488
HOLYOKE, MASSACHUSETTS



Uniform Chips with longer lasting Heppenstall chipper knives



Heppenstall Chipper Knives produce chips of uniform size and thickness with a minimum amount of sawdust loss. Uniform chips require less variation in degrees of cooking during a batch cook. Pulp quality is more consistent. Longer lasting Heppenstall Chipper Knives reduce the sharpening cycle—decrease your knife costs per ton of pulp.

For more information, contact your Heppenstall representative or write us direct.

HEPPENSTALL COMPANY
PITTSBURGH 1, PA.
Plants: Pittsburgh & New Brighton, Pa. • Bridgeport, Conn.

MIDVALE-HEPPENSTALL COMPANY
NICETOWN, PHILADELPHIA 40, PA.

NEW EQUIPMENT . . .

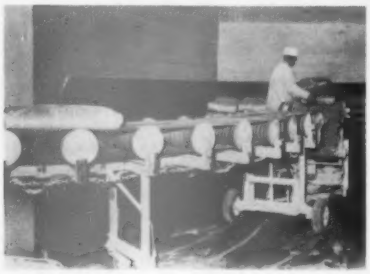
can be varied within a series of temperature zones. A further division is into 15 in. wide sections, each with an individually operated dryer, to obtain a controlled impingement across the sheet.

The SF Air Dryer, type C, fits individual cylinders of the paper machine.

Supplier: **American SF Products, Inc., 701 Palisade Ave., Englewood Cliffs, N.J.**

Flexible conveyor

. . . for one-man loading

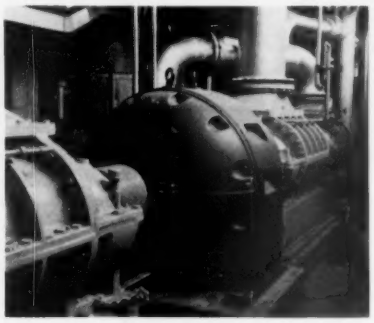


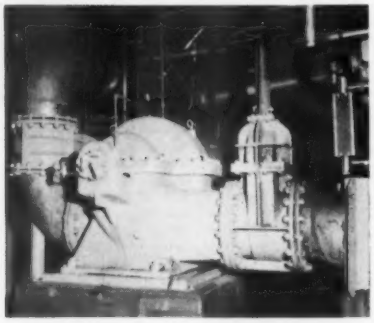
Applications: Loads all kinds of packages inside box cars or trucks to the stacking point.

Features: Comprising the flexible conveyor is a series of spring belts operating over grooved rollers mounted in hinged frames. Packages are delivered to a loading point unit where a high speed belt moves up and down under power and from side to side to facilitate stacking by one man.

Supplier: **Power-Curve Conveyor Co., 2185 South Jason St., Denver 23, Colo.**

The case of the missing fan pump





We regret that on page 32 of the August 7th issue of PULP & PAPER a caption erroneously identified equipment in the St. Regis Tacoma mill as a fan pump handling secondary stock. This picture (left) actually shows one of two tandem banks of Roots-Connersville vacuum pumps in this mill, each with a 600 hp General Electric synchronous motor.

As for the picture right, for which our caption was intended—it is a Goulds 12,300 gmp fan pump powered by 400 hp motor to handle secondary stock. A Hilton air-actuated valve shows at left for infeed drive. Rovang stock valve is at the outfeed of the fan pump.

ROGERS

MODEL 300

EXTRA HEAVY DUTY KNIFE GRINDER

with HYDRAULIC DRIVE

SIZES: 78" to 240" CAPACITY.

Other Standard Equipment includes Heavy Duty Precision Ball Bearing Spindle, 26" Segmental Grinding Wheel, 25 HP TEFC Motor, Automatic Force Feed Oiler, 8" x 8" Swiveling Knife Bar, Wet Grinding and Precision Wheel Dresser. Write for complete information. Other Models available.

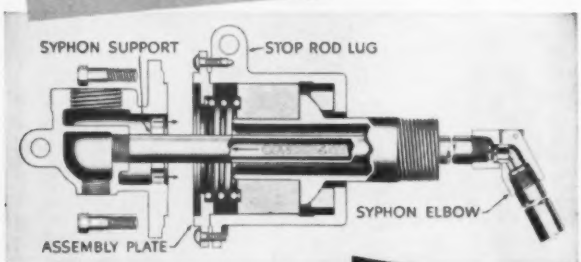
SINCE 1887

SAMUEL C. ROGERS & CO., INC.

2070 SHERIDAN DRIVE • BUFFALO 23, NEW YORK

The right rotary joint for every need!

. . . ON PAPER MACHINE DRYERS
. . . CORRUGATORS
. . . CALENDERS
. . . ROOFING MACHINES
. . . WAXERS
. . . EMBOSSERS
. . . PRINTING PRESSES



Type "SBP" shown is completely self-supporting. Like all Johnson Joints it has no packing, needs no lubrication or adjustment. The syphon elbow replaces unwieldy curved condensate drainage pipes with two straight pipes, hinges to pass right through the joint. Write for Bulletin S-3002. Johnson Rotary Pressure Joints are available for all operating speeds, pressures, mountings.

Johnson ROTARY PRESSURE Joints

First in the Paper Industry

THE JOHNSON CORPORATION

849 Wood St., Three Rivers, Mich.

REVOLUTIONARY • PROVEN
PREFERRED

DRAPLEX Felts

NEEDLED

MADE ONLY BY
DRAPER BROTHERS COMPANY
CANTON, MASS.

ATTENTION IMPORTERS! . . . . . .

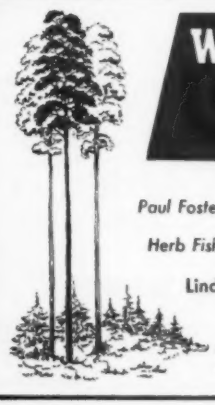
V/O "EXPORTLES"—Soviet exporting organization for all kinds of Forest Products—Logs, Sawgoods, Woodpulp, Plywood, etc. offers for shipment from the U.S.S.R.:

a) **Unbleached Sulphite Woodpulp "strong"**
Delivery from South Sakhalin (Soviet Far East) on CIF or FOB terms.
Samples of the above Woodpulp can be obtained from Amtorg Trading Corporation.

b) **Unbleached Kraft Woodpulp.**

Please address inquiries to:
Amtorg Trading Corporation
355 Lexington Avenue
New York 17, New York
Tel: MU 2-7921, 2-7919, 2-7404

or directly to:
V/O "EXPORTLES"
Ul. Kuibysheva 6
Moscow, U.S.S.R.

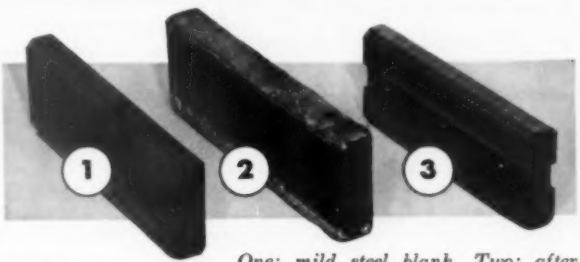


WILLIAMS-GRAY COMPANY
221 North LaSalle Street
Chicago 1, Illinois

Serving the Paper Industry
1906

Paul Foster • Peter Talbot
Herb Fishburn • Wes Gallup • Bill French

Lindsay Wires
Knox Woolen Felts
Mount Vernon Dryer Felts
Carrier Rope, Splicing Tissues, Deckle Webbing, Apron Cloth, Wire Brushes



How to

One: mild steel blank. Two: after depositing Colmonoy No. 6 alloy. Three: after machining and grinding.

Build a Better Chipper

Re-build worn chipper knives the same way one smart chipper manufacturer (Jones & Co., Birmingham, Ala.) builds new ones. Use Colmonoy No. 6 hard-surfacing rod to put a long-wearing edge on mild steel blanks. Or re-build your worn knives the same way. You'll get up to four times longer knife life.

HARD-SURFACING & BRAZING ALLOYS

WALL COLMONOY CORPORATION
19345 JOHN R STREET • DETROIT 3, MICHIGAN

Buffalo • Chicago • Houston • Los Angeles • Morrisville • New York • Pittsburgh • Montreal • London, England

SULPHITE MILL ACID PLANTS
SEMICHEMICAL LIQUOR PLANTS

SULPHUR BURNING PLANTS
GAS COOLERS—SURFACE AND SPRAY TYPE
JENSSEN TWO TOWER ACID SYSTEMS
JENSSEN PRESSURE ACID SYSTEMS
JENSSEN AUXILIARY PROCESS TOWERS
RECOVERY PLANTS—COOKING ACID
SOLUBLE BASE ACID PLANTS
JENSSEN SO_2 ABSORPTION SYSTEMS
FOR BLEACH PLANT APPLICATION
SULPHUROUS ACID PREPARATION
COMPLETE DESIGN AND INSTALLATION

G. D. JENSSEN CO. INC.
MASSENA, NEW YORK
James Brinkley Co., 417-8th Ave. So., Seattle, Wash.
FOUNDED 1915
Western Representative:

PULP MILL MACHINERY

BY *Clark-Aiken*

PULP CUTTING, FINISHING,
Warehousing and Shipping Equipment
Complete Engineering Service
The CLARK-AIKEN COMPANY, Lee, Mass.

Classified Advertising

ASSISTANT SUPERINTENDENT

Multiplant pulp and paper company has opening offering excellent opportunity for an Assistant Superintendent in the field of coated bleached heavy weight board in large modern plant located in the Southern region. Duties will include responsibility for the supervision of Board-making operations including production, quality and cost control. We are seeking a man experienced in this field who has potential to move up in management.

Please send resume of experience, education and salary requirements to Box P-387, PULP & PAPER, 370 Lexington Avenue, New York 17, N.Y.

WANTED

Technical Superintendent for a 375 ton per day kraft linerboard mill. Must have several years technical experience in all phases of kraft pulp and paper manufacturing, with organizational and leadership abilities. Send complete resume including personal data, educational and employment history to:

Mr. Hugo Trygg, Mill Manager
Boise Cascade Corporation
P.O. Box 500
Wallula, Washington

SALES ENGINEER

We have an opening for a young, aggressive engineer interested in Technical Industrial Sales. Position requires sales contacts and engineering for air handling systems and heavy equipment. An engineering degree, or equivalent, and ability to work with customers at upper levels of Engineering and Management are basic prerequisites. Position is with a young, fast growing organization located in Wisconsin's Fox River Valley. Must be willing to relocate near Neenah, Wisconsin.
Resume should include complete personal and professional qualifications and present salary.
Reply Box 468, Neenah, Wisconsin

MID-ATLANTIC REPRESENTATIVE

Leading Dryer Felt supplier requires aggressive man to call on paper mills in Mid-Atlantic area. Good pay, expenses and automobile furnished; also insurance and retirement. Apply givng age, education, experience, family status, references. Reply to Box P-374, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

ATTRACTIVE OPPORTUNITIES FOR PAPER COLORIST and PAPER TECHNOLOGIST

REQUIREMENTS INCLUDE: Experience in paper pulping, beating, dyeing and color matching.

POSITION INCLUDES: Some travel as technical service advisor in customer's mills.

Excellent opportunity for advancement, all benefits, generous salary. Send resume in confidence to:

PERSONNEL DEPARTMENT
NATIONAL ANILINE DIVISION
ALLIED CHEMICAL CORPORATION
1051 South Park Avenue
Buffalo 10, New York

an equal opportunity employer

AVAILABLE OCTOBER 1st

For consulting or management position, Kraft Pulp and Paper. Thirty three years experience, bleached and unbleached papers and boards. Chemical Engineer graduate. Age 54. Excellent physical condition. Write Box P-391, PULP & PAPER, 370 Lexington Ave., New York 17, New York.

FOR SALE

Paper Mill in Argentine Republic, near Buenos Aires.
Fourdrinier Machine (European Manufacture 1950). Capacity approximately 18 tons daily; both MG and MF light and heavy weights. Mill fully equipped; Slitters & Rewinders, etc. For further particulars write:

Poste Restante Suc. 1 (B)
C.I. No. 692.974 AVDA. de Mayo 757
Buenos Aires, Argentina

WANTED

Rotary Kilns & Dryers, all sizes, etc. We pay cash. Send us complete specifications on your idle equipment. PERRY EQUIPMENT CORP., 1403 N. 6th St., Phila. 22, Pa.

PAPER MEN

$5,000 to $50,000

SALES • PRODUCTION • TECHNICAL

Finding and landing **THE ONE BEST JOB** requires sound analysis, careful planning, proper contacts and skillful negotiation.

Paper men ourselves, and the only recognized professional specialists in the world in our particular field, we assist responsible paper men to accelerate their careers by uncovering and developing **THE SPECIFIC SITUATION** that most exactly fits the needs of each individual served.

If you seek to better yourself, and your performance to date entitles you to our endorsement, we can and will help you. Contact us in absolute confidence for information regarding procedure.

GEO. M. SUNDAY & ASSO.
PERSONNEL CONSULTANTS
TO THE
PULP, PAPER & ALLIED INDUSTRIES
6 E. Monroe Chicago ANdover 3-1970

FOR SALE

The following Screen Plates:
21—New Jones Bronze Screen Plates. Cut .016", 14 3/16" x 83" x 3/16"
47—New Size 2 Bird Bronze Screen Plates. Cut .016", 12¼" x 100" x 3/16"
No reasonable offer refused. Reply Box P-383, PULP & PAPER, 370 Lexington Ave., New York 17, N. Y.

PROJECT ENGINEERS

We are seeking several graduate engineers with papermill experience to handle complete engineering of paper machine components. Compensation and position open, depending on experience and ability.

Southwestern Ohio location, medium-sized community, new office and factory, small to medium-sized company provide highly desirable working conditions. A young, growing company with a record of success in a world-wide business offers outstanding opportunity.

Send resume to:

Industrial Relations
The Manchester
Machine Company
P. O. Box 509
Middletown, Ohio

Advertisers' Index

Allis-Chalmers Mfg. Co. 37
American Hoist & Derrick Co. 87
American Pipe & Construction Co. 22
Amtorg Trading Corp. 93
Asten-Hill Mfg. Co. ..... inside back cover

Beloit Eastern Corp. 33
Bird Machine Co. 2
Black-Clawson Co. 30

Castle & Overton, Inc. 72
Chain Belt Co. 8
Chemipulp Process Inc. 88
Chicago Bridge & Iron Co. 64
Clark-Aiken Co. 41, 93
Classified advertising 94
Clinton Corn Processing Co. 62

Deere & Co. 69
Diamond Power Specialty Corp. 34
Dow Chemical Co. 28-29, 73
Draper Bros. Co. 93
Dryden-East Hotel 90

Eimco Corp. 83
Esco Corp. 18-19
W. P. Evans & Son Ltd. ..... inside front cover

Falk Corp. 24-25
Fisher Governor Co. 14
Foxboro Co. 59

Heil Co. 40
Heppenstall Co. 91
S. W. Hooper Corp. 71
Hubinger Co. 32
Huyck Felt Co. 79

Jagenberg USA, Inc. 84
G. D. Jenssen 93
Johnson Corp. 92
E. D. Jones Corp. 4

Link-Belt Co. 63

Martin-Decker Corp. 91
Minerals & Chemicals Philipp Corp. 6
Minneapolis-Honeywell 44-45

Nash Engineering Co. 38-39
Northwest Engineering Co. 66

Ohio Knife Co. 12
Olin Mathieson Chemical Corp. 85
Overly's, Inc. 86

Pacific Valves, Inc. 89
Pennsalt Chemicals Corp. 20
Perkins-Goodwin Co. ..... back cover
Pittsburgh Chemical Co. 10-11
Puget Sound Pulp & Timber Co. 77

Rader Pneumatics, Inc. 80
Rice Barton Corp. 1
Ridge Tool Co. 31
Samuel C. Rogers Co. 92
Roots-Connersville Blower Div. 26

Shell Oil Co. 81
Sinclair Co. 91
Sonoco Products Co. 16
Southwestern Engineering Co. 42
Stauffer Chemical Co. 36
Sutorbilt Corp. 90

Titanium Pigment Corp. 43

U. S. Rubber Co. 65

Valley Irons Works 74-75
R. T. Vanderbilt Co., Inc. 46

Wall Colmonoy Corp. 93
West End Chemical Co. 36
Weyerhaeuser Co. 35
Williams-Gray Co. 93

PULP & PAPER's Directory of Consultants and Engineers

TIMBER ESTIMATORS — FORESTERS
SERVING THE INDUSTRY FOR OVER 40 YEARS
C. D. SHY & CO.
COMMERCE TITLE BLDG MEMPHIS 3, TENN

S. J. BAISCH Associates
Consulting Engineers
104 East Second Street, Kaukauna, Wisconsin
PHONE ROckwell 6-3521
Specializing in: pulp—paper—converting—power —surveys & reports—corrosion—design

PULP & PAPER MILLS
ENGINEERING-DESIGN-CONSTRUCTION-INSTALLATION-PLANT START-UP
Director, Pulp & Paper Division, W. T. Webster
THE H. K. FERGUSON COMPANY
A SUBSIDIARY OF MORRISON-KNUDSEN COMPANY, INC.
Main Office: Cleveland, Ohio
Other Offices:
New York • San Francisco • London • Paris • Sao Paulo

ALVIN H. JOHNSON & CO.
INCORPORATED
Pulp and Paper Mill
Consulting and Designing Engineers
Serving the Pulp & Paper Industries Since 1929
415 Lexington Ave. New York 17, N. Y.

CHAS. T. MAIN, INC.
ENGINEERS
Process Studies, Specifications and Construction Supervision
PULP AND PAPER MILLS
Steam Hydraulic and Electrical Engineering
Reports, Consultation and Valuations
Boston, Massachusetts Charlotte, North Carolina

PROFESSIONAL CARD ADVERTISING RATES.
$20 per issue on 13-time basis only
Special rate: $175 for 13 insertions,
$300 for 26 insertions
if paid in advance

ELLIOT S. KOHN
Consulting Engineer
PULP AND PAPER MILLS
420 Lexington Ave., New York 17, N.Y.

RUBENS AND PRATT
CONSULTING ENGINEERS
761 Olympic National Bldg. Seattle 4, Wash.
MU 2-1244
PULP AND PAPER MILL DESIGN

H. A. SIMONS (INTERNATIONAL) LTD
CONSULTING ENGINEERS
PULP AND PAPER MILL DESIGN
CONSULTATION, REPORTS, PLANNING, DESIGN, ESTIMATING
SPECIFICATIONS, CONTRACTS, CONSTRUCTION ADMINISTRATION
Head Offices: 16 East Hastings Street, Vancouver B.C., Canada

Water and Waste Specialists
MALCOLM PIRNIE ENGINEERS
Consulting Civil and Sanitary Engineers
25 West 43rd St. New York 36, N.Y.
3013 Horatio Street Tampa 9, Florida

PULP & PAPER

ALBERT W. WILSON Editor
MAURICE CASTAGNE Associate Editor
VINCENT W. DE SALVO Managing Editor
WM. F. DIEHL JR. Southern Editor
LOUIS H. BLACKERBY Western Editor
C. L. SHAW Canadian Edit. Director
PETER INSERRA Assistant Editor
STUART F. LEETE District Mgr.

District Sales Managers

JOHN W. ANDERSON Cleveland
ROBERTS H. BURTON Chicago
KENNETH A. JOHNSON New York
STEPHANIE POLLITZER Prod. Mgr.
MAUDE CONRAD Asst. Prod. Mgr.
CHARLES C. BAAKE Circ. Mgr.

RALPH R. DAVID
General Manager

National Editors Around the World

Argentina: Julio Cesar Lera; **Australia:** Dr. Wilby E. Cohen; **Austria:** Dr. Georg H. Sääf-Norden; **Belgium:** William F. Boks; **Brazil:** Eugene Field Horn; **Chile:** Sergio Valenzuela M; **Czechoslovakia:** Dr. Jaraslav Havránek; **Denmark:** Erik Persson; **East Germany:** Dr. Ernst Giese; **Egypt:** Youssef Found; **Fed. Rep. of Germany:** Dr. Emil Fischer (economics); Dr. Phil Hellmuth Müller-Clemm (technical); **Finland:** Nils J. Lindberg; **France:** Jean Usse; **Hungary:** Dr. Georg Vamos; **India:** Dr. R.V. Bhat, Dr. J.C. Aggarwala; **Indonesia:** Ing. Liem Yoe Tjiang; **Ireland:** Dr. Peter G. Sherry; **Israel:** M.D. Cohen; **Italy:** Francesco Pastina, Alessandro Restagno; **Japan:** Motoki Matsunaga; **Mexico:** C. García Robles; **Netherlands:** Henk Voorn; **New Zealand:** A.R. Entrican; **Norway:** Hans Petter Dahm; **Pakistan:** Fakhruddin Ahmed; **Philippines:** A.A. Adamson; **Poland:** Prof. Edward Szwarcsztajn; **Rumania:** O. Russo; **U.S.S.R.:** V.A. Galasiev, H. Djaliloy; **Spain:** Jose Luis Asenjo; **Sweden:** Dr. Olle Andersson; **Switzerland:** Siegfried H. Aeschbacher; **Taiwan:** Ni-Hung Chang; **Turkey:** Muñt Erenli, Fahir Sipahi; **Union of So. Africa:** Tom Macdonald; **United Kingdom:** F.H. Llewellyn Thomas; **Uruguay:** Juan Carlos Raffo Fravega; **Yugoslavia:** Bozidar Strasek.

A Miller Freeman Publication

WILLIAM B. FREEMAN President
MILLER FREEMAN JR. Exec. Vice Pres.

ABC AUDITED PAID CIRCULATION — READERSHIP Eastman RESEARCH — ABP BUSINESS PAPER LEADERSHIP

General Office
370 Lexington Ave. New York 17, N. Y.
MUrray Hill 3-9294

District Offices:
Chicago 26, Ill.—1791 Howard St.
RO 4-3420
Atlanta 12, Ga.—2123 Liddell Dr., N.E.,
TRinity 6-9086
Cleveland 3, Ohio—4500 Euclid Ave.,
EXpress 1-4180
Seattle 4, Wash.—71 Columbia St.,
MAin 2-1626
Vancouver 3, Can.—402 Pender St., W.,
MUtual 5-7287
Portland 5, Ore., 731 SW Oak St.,
CA 2-1313
San Francisco 5, Calif.—500 Howard St.,
EX 7-1881
Los Angeles 65, Calif.—3501 Eagle Rock
Blvd., CL 5-7194
London, W. 1, England—Bernard W.
Lansdowne, 130 Crawford St.,
WELbeck 3624
Köln-Merheim, Germany—Dr. Walter F.
Vogeno, 28 Attendorner Str.

mf MILLER FREEMAN PUBLICATIONS

The last word

Peter Inserra Is Assistant Editor

PETER INSERRA

We have another new editor to introduce in this issue—Peter Inserra, who was graduated only last June from the University of Missouri, which possesses what many publishing business professionals consider the greatest journalism school in the nation (we can already hear a painful outcry from alumni of Columbia, Northwestern, Washington or other journalism schools, but even these often put Missouri in a top bracket with their own).

Mr. Inserra is assistant editor on the PULP & PAPER headquarters staff in New York City. His responsibility is to Albert W. Wilson, editor, Maurice R. Castagne, associate editor, and Vincent W. DeSalvo, managing editor (introduced on this page in the last issue)—in that order.

The addition of Mr. Inserra augments and strengthens the editorial team, and thereby, the increasing services that this magazine is able to offer to you, our readers. Service to readers is the *raison d'etre* of publishing.

Mr. Inserra majored in magazine journalism, with minors in English and advertising at Missouri. Meanwhile, as with all journalism students at Missouri, he had reporting experience on the daily newspaper of Columbia, the city in which the school is located. Other experience included a Long Island daily newspaper, on which he developed a special section.

His newspaper work included assignments covering subjects which are of prime interest in this industry, such as automation electronics, atomic energy, manufacturing, etc., and this was valuable preparation for his new duties in the industry.

Mr. Inserra is single, lives in a Manhattan apartment and was 23 years old last August 12. In his years ahead, he will see many important new developments in pulp and paper and will have a hand in reporting them.

Internationalism on the March

The overly-sensitive atmosphere that built up recently over American investments in Canada seems to be clearing up. Oddly, there is an important side development of new investments from outside this Hemisphere in both Canada and the United States.

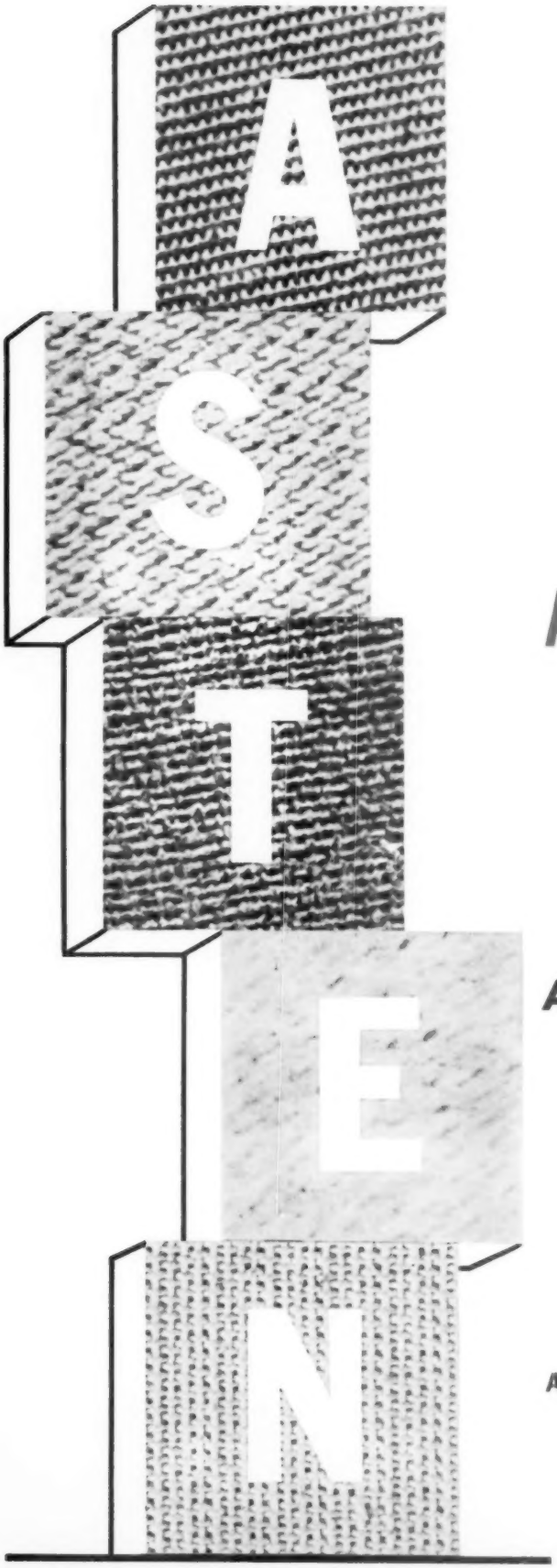
This international trend reveals that this old world is really "growing smaller." Perhaps a good thing, too, as it may help to keep peace if there is more of it.

In Canada, the Reed Paper Group of England has moved in with major investments, as it has in four Continental European nations and elsewhere. The Bowater Organization of England now has two large mills in the United States, as well as two in Canada.

Belgian interests are planning a groundwood and newsprint mill in St. John, New Brunswick. A great Swedish company with many centuries of history behind it, Stora Kopparberg, has a truly remarkable new development in woodpulp in eastern Nova Scotia, which is already bringing a taste of prosperity to many Nova Scotian communities which were definitely depressed areas. Pulpwood producers over two-thirds of Nova Scotia are hauling in wood for this mill, even before it is completed.

The Swedish Wenner-Gren interests have big plans for pulp and other industries in northern British Columbia. In Alaska, there is the Japanese pulp at Sitka. In upper New York state, a very successful German photographic paper manufacturing firm is building a paper mill in partnership with an American papermaking firm. In Latin America there are many American, Canadian and at least one Swedish investment in pulp and paper manufacturing. And so it goes.

If this sort of thing keeps on spreading, the question of the Canadian-American business relations may be of less concern.



build paper-making profits with the exact ASTEN Dryer Felts for your needs

All types for all purposes

SYNBEST®/SYNCOT®

ASBESTOS / SYNTHETIC

"Economy in the long run"

ASTEN-HILL MFG. CO. Philadelphia 29, Pa.
Walterboro, S. C.
Salem, Ore.

ASTEN-HILL LIMITED Valleyfield, Que.

• FREE SEAM BOOK—Write today for your copy of 28-page book on dryer felt seams.

PULP

PAPER

Perkins-Goodwin Co.

Established 1846

PULP AND PAPER MARKETING-MANAGEMENT

1 ROCKEFELLER PLAZA, NEW YORK 20, N.Y.

CHICAGO, ILL. • KALAMAZOO, MICH. • LUFKIN, TEXAS • LOCKPORT, LA. • SAN FRANCISCO, CAL. • STOCKHOLM, SWEDEN